

# **WILDLAND FIRE FIGHTING ESSENTIALS**

---

## **INSTRUCTOR GUIDE**



# TABLE OF CONTENTS

Orientation And Administration .....	i
Wildland/Urban Interface Fire.....	1
Concepts Of ICS Organization.....	5
State Fire And Rescue Mutual Aid Plan .....	22
Surviving The Strike Team Response .....	36
"Agency Specific" Strike Team Standard Operating Procedures .....	47
Wildland Fire Terminology .....	53
Factors Affecting Wildland Fires.....	62
Defensive And Offensive Strategies In Wildland Fire Fighting.....	78
The Use Of Direct And Indirect Attacks On Wildland Fires .....	82
Structure Triage.....	92
Using Structures And Vehicles For Refuge In Wildland Fires .....	118
Wildland Fire Safety .....	127
Safety Precautions To Be Used Around Aircraft.....	141
Fundamentals Of Fire Shelters .....	150
How To Deploy Fire Shelters.....	163
Suggested Training Program .....	Appendix A
Mutual Aid Regions .....	Appendix B
Command Checklist .....	Appendix C
Written Examination .....	Appendix D

## ADMINISTRATIVE DETAILS

Each regional course should begin by taking care of the administrative necessities and discussing some of the parameters of the course. The following checklist is provided as an aid to identify the usual items that should be discussed at the beginning of each course.

- \_\_\_\_\_ Registration
- \_\_\_\_\_ Instructor Introduction
- \_\_\_\_\_ Student Introduction
- \_\_\_\_\_ Explanation of the Certification System
- \_\_\_\_\_ Course Hours
- \_\_\_\_\_ Minimum Passing Score
- \_\_\_\_\_ Make-up Quizzes/Exams
- \_\_\_\_\_ Exam Retake
- \_\_\_\_\_ Homework
- \_\_\_\_\_ Breaks
- \_\_\_\_\_ Smoking
- \_\_\_\_\_ Tardiness
- \_\_\_\_\_ Absences

# WILDLAND FIRE FIGHTING ESSENTIALS

March 1992

COURSE TITLE: Wildland Fire Fighting Essentials

COURSE OBJECTIVES: To ...

1. Provide fire service personnel with an overview of the California Fire and Rescue Mutual Aid Plan and their responsibilities participating in a strike team.
2. Prepare fire service personnel to utilize the Incident Command System during emergency operations while responding as strike team.
3. Provide fire service personnel with a variety of methods and techniques to operate in a wildland suppression effort with safety.
4. Provide fire service personnel with an opportunity to apply major principles of strategy and tactics to deal with wildland fire fighting operations.
5. Provide fire service personnel with the tactics and methods to provide structure protection during wildland fire suppression.
6. Prepare fire service personnel with wildland fire fighting survival skills for potential extreme wildland fire conditions.

COURSE CONTENT:

16 HOURS

Orientation And Administration .....	0:30
Wildland/Urban Interface Fire .....	1:00
Concepts Of ICS Organization .....	2:00
State Fire And Rescue Mutual Aid Plan .....	1:00
Surviving The Strike Team Response .....	1:00
"Agency Specific" Strike Team Standard Operating Procedures .....	1:00
Wildland Fire Terminology .....	0:30
Factors Affecting Wildland Fires .....	1:00
Defensive And Offensive Strategies In Wildland Fire Fighting .....	0:30
The Use Of Direct And Indirect Attacks On Wildland Fires .....	0:30
Structure Triage .....	1:00
Using Structures And Vehicles For Refuge In Wildland Fires .....	0:30
Wildland Fire Safety .....	1:00
Safety Precautions To Be Used Around Aircraft .....	0:30
Fundamentals Of Fire Shelters .....	2:00
How To Deploy Fire Shelters .....	0:30

WILDLAND FIRE FIGHTING ESSENTIALS  
COURSE CONTENT: (continued)

Course Review ..... 0:30  
Final Examination ..... 1:00

# INSTRUCTOR GUIDE

WILDLAND/URBAN INTERFACE

---

## WILDLAND FIRE FIGHTING ESSENTIALS

### Lesson Plan # 1

**TOPIC:** Wildland/Urban Interface Fire

**LEVEL:** I

**TIME:** 1 hour

**BEHAVIORAL OBJECTIVE:**

**Given:** A written examination

**Performance:** The student will identify the make up of a wildland / urban interface fire

**Standard:** With a minimum 70 % accuracy according to Wildland Firefighting, Clayton-Day-McFadden, revised 1987, State of California

**REFERENCES:** Wildland Firefighting, Clayton-Day-McFadden, revised 1987, State of California, Page 78

**MATERIALS NEEDED:** Appropriate audio/visual equipment and materials

**PREPARATION:** The urbanization of our wildlands has multiplied the complexities of fire within our state. You might ask your self what is wildland urbanization? How does it effect me as a firefighter? Larger dollar losses are now resulting from these wildland fires, that were once only grass and brush. Now add to the problem, higher population in these areas. All this is compounding the problems faced by today's wildland firefighter.

# INSTRUCTOR GUIDE

WILDLAND/URBAN INTERFACE

PRESENTATION	APPLICATION
<ul style="list-style-type: none"><li>I. Wildland / Urban Interface<ul style="list-style-type: none"><li>A. The traditional American dream<ul style="list-style-type: none"><li>1. To own a little place in the country</li><li>2. As complexities of metropolitan life multiply</li><li>3. Many choose to pursue their dream of country living</li><li>4. A curious blend of people and nature</li><li>5. Little in the way of protective separation</li><li>6. Happening at a accelerated rate</li></ul></li><li>B. The placement of the homes<ul style="list-style-type: none"><li>1. Natures landscape is an integral part in their placement</li><li>2. Homes are built into the landscape<ul style="list-style-type: none"><li>a) Top of chimneys</li><li>b) On ridge tops</li><li>c) In and around trees</li><li>d) Steep slopes</li><li>e) All for aesthetics</li><li>f) To form a partnership with nature</li><li>g) Vegetation clearance</li><li>h) Roads into the homes<ul style="list-style-type: none"><li>1) Narrow</li><li>2) Steep, one lane</li><li>3) Over grown with vegetation</li></ul></li></ul></li></ul></li></ul></li></ul>	

# INSTRUCTOR GUIDE

WILDLAND/URBAN INTERFACE

PRESENTATION	APPLICATION
<p>C. Construction of homes</p> <ol style="list-style-type: none"><li>1. Most are wood framed<ol style="list-style-type: none"><li>a) Untreated wood shakes</li><li>b) Eve openings</li><li>c) Large expanses of glass windows and doors</li></ol></li><li>2. Limited water supply<ol style="list-style-type: none"><li>a) Wells</li><li>b) Storage tanks</li><li>c) Ponds and creeks</li><li>d) Swimming pools</li></ol></li></ol> <p>II. Increased Responses</p> <ol style="list-style-type: none"><li>A. State fire resources are being decreased with budget restraints</li><li>B. Federal fire resources are equally being reduced</li><li>C. This has increased the needs and utilization of metropolitan resources to become involved by responding to the rural areas</li></ol>	<p><u>INSTRUCTOR NOTE</u> Show video" Fire in the Interface"</p>



# INSTRUCTOR GUIDE

WILDLAND/URBAN INTERFACE

---

## SUMMARY

With the rapid movement of people out of the metropolitan areas, it has created a whole new set of fire fighting problems for firefighters today. Homes are built to take advantage of views, they sit atop of ridges, they blend into the vegetation, and with them comes the population.

## EVALUATION

The student will be evaluated by completing a written examination.

## ASSIGNMENT

To be determined by the instructor(s).

# INSTRUCTOR GUIDE

## CONCEPTS OF ICS ORGANIZATION

---

### WILDLAND FIRE FIGHTING ESSENTIALS

#### Lesson Plan # 2

**TOPIC:** Concepts Of ICS Organization

**LEVEL:** II

**TIME:** 2 hours

**BEHAVIORAL OBJECTIVE:**

**Given:** A written examination

**Performance:** The student will identify the positions and responsibilities of recognized in the ICS Organizational chart

**Standard:** With a minimum 70 % accuracy according to ICS 220

**REFERENCES:** Incident Command System, 1983, Published by Fire Protections Publications, Oklahoma State University  
ICS 220 Course, FSTEP, State Fire Training  
Wildland Firefighting, Clayton-Day-McFadden, 1987, Published by State of California

**MATERIALS NEEDED:** Appropriate audio/visual equipment and materials

**PREPARATION:** Fighting ground cover fires is a very dangerous occupation. The success or failure of firefighters combating the wildland fires is based on the utilization and development of the Incident Command Structure or Organization. We'll identify the basic concepts and principles for developing an organizational system for managing resources on major wildland incidents. It has been further identified that these principles are the foundation for coping with and managing "All Risk" type incidents, no matter what classification, size or type of incident firefighters are dealing with on a day to day basis.

# INSTRUCTOR GUIDE

## CONCEPTS OF ICS ORGANIZATION

PRESENTATION	APPLICATION
<p>I. Concepts Of The Incident Command System</p> <p>A. National Interagency Incident Management System (NIIMS) and its five subsystems</p> <ol style="list-style-type: none"> <li>1. Incident Command System</li> <li>2. Training</li> <li>3. Qualifications and Certification</li> <li>4. Publications Management</li> <li>5. Supporting Technology</li> </ol> <p>B. Relationship of ICS to NIIMS</p> <ul style="list-style-type: none"> <li>• Five subsystems collectively provide a total systems approach to all-risk incident management</li> </ul> <p>C. Project Firescope</p> <ol style="list-style-type: none"> <li>1. 1970's</li> <li>2. Members included: California Department of Forestry; United States Forest Service; Federal Emergency Management Agency; California State Fire Marshal's Office; California Office of Emergency Services; "Firescope Partners"</li> <li>3. The new terminology for the "All Risk" Incident Management System has switched from FIREScope (Old concept) to FIREScope (New concept). The old concept of FIREScope involved multiple agencies in Southern California along with State and Federal Agencies. The NEW approach with FIREScope will be Firefighting RESources of California Organized for Potential Emergencies</li> </ol>	<p>What are the five subsystems of ICS?</p>

## CONCEPTS OF ICS ORGANIZATION

-7-

# INSTRUCTOR GUIDE

## CONCEPTS OF ICS ORGANIZATION

PRESENTATION	APPLICATION
<p>G. Three basic common elements of the system:</p> <ol style="list-style-type: none"> <li>1. Common organization</li> <li>2. Common terminology</li> <li>3. Common procedures</li> </ol> <p>H. Manageable Span-of-Control</p> <ul style="list-style-type: none"> <li>• Emergency management responsibility: span-of- control should range from three to seven with FIVE being established as a rule of thumb</li> </ul> <p>I. Modular Organization</p> <ul style="list-style-type: none"> <li>• ICS develops from the top down with responsibility placed initially with the Incident Commander, and as the need exists, four separate sections can be developed based upon the management needs of the incident (FLOP)- operations, planning, logistics, and finance</li> </ul> <p>II. Unified Command</p> <p>A. All agencies who have jurisdictional responsibility at a multi - jurisdiction incident should contribute to the process</p> <p>B. Under a Unified Command Structure in the ICS, the implementation of the action plan will be done under the direction of a single individual, the Operations Chief</p> <p>C. Consolidated Action Plan</p> <ol style="list-style-type: none"> <li>1. Every incident needs some form of an action plan. This action plan is management by objectives. The plan should be definite with work periods and control times</li> </ol>	<p>List common elements of the system.</p>

# INSTRUCTOR GUIDE

## CONCEPTS OF ICS ORGANIZATION

PRESENTATION	APPLICATION
<p>2. Written action plans used for:</p> <ul style="list-style-type: none"><li>a) Resources from multiple agencies are used</li><li>b) Involvement with several jurisdictions</li><li>c) Incident requires changes in shifts of personnel and/or equipment</li></ul> <p>III. Communications</p> <ul style="list-style-type: none"><li>• "Clear Text"</li></ul> <ol style="list-style-type: none"><li>1. Command Net: link for incident command, key staff members, sections chiefs, division and group supervisors</li><li>2. Tactical Nets: several nets based on the determination by a joint planning and operations function. The communication leader will develop the plan</li><li>3. Support Nets: handle status changes for resources, support requests and other non-tactical or non-command functions</li></ol> <p>IV. Resource Management</p> <ul style="list-style-type: none"><li>• May be managed in three different ways depending on the needs:</li></ul> <ol style="list-style-type: none"><li>1. Single resources: individual units assigned as primary tactical units</li><li>2. Task Forces: is any combination of single resources which can be temporarily assembled for a specific tactical need and demobilized as single resources</li></ol>	<p>What is a Task Force?</p>

# INSTRUCTOR GUIDE

## CONCEPTS OF ICS ORGANIZATION

PRESENTATION	APPLICATION
<p>3. Strike Teams: are a set of same resources of the same kind and type, which have an established minimum number of personnel. Being a combination of common elements</p> <p>4. Resources are either Primary or Support</p> <p>V. Predesignated Incident Facilities</p> <ul style="list-style-type: none"> <li>Determination of the kinds of facilities and the locations will be based upon the requirements of the incident and the direction of the Incident Command</li> <li>Example: Command Post, Incident Base, Camps, Staging Areas, Helibases and Helispots</li> </ul>	<p>What is a Strike Team?</p>
<p>VI. Functional Areas</p> <p>A. Five major functional areas of the ICS</p> <ol style="list-style-type: none"> <li>1. Command</li> <li>2. Operations</li> <li>3. Planning</li> <li>4. Logistics</li> <li>5. Finance</li> </ol> <p>B. Potential configurations of the Command Function</p> <ol style="list-style-type: none"> <li>1. Single Command</li> <li>2. Unified Command</li> </ol>	<p>What are the five functional areas of ICS?</p>

# INSTRUCTOR GUIDE

## CONCEPTS OF ICS ORGANIZATION

PRESENTATION	APPLICATION
<p>VII. Command Staff</p> <p>A. Information Officer</p> <ul style="list-style-type: none"> <li>• Develops accurate and complete information regarding the incident cause, size, current situation, resources committed and other matters</li> </ul> <p>B. Safety Officer</p> <ol style="list-style-type: none"> <li>1. Assess hazardous and unsafe situations</li> <li>2. Develops measures for assuring personnel safety</li> <li>3. Should have authority to stop and/or prevent unsafe acts</li> </ol> <p>C. Liaison Officer</p> <ol style="list-style-type: none"> <li>1. Is the point of contact for representatives from other agencies</li> <li>2. Within a unified command, the liaison would be for representatives NOT involved with the incident</li> </ol> <p>D. The Information Officer, Safety Officer, and Liaison Officer make up the Command Staff</p>	<p>Who makes up the Command Staff?</p>
<p>VIII. Operations Section</p> <p>A. The Operations Section Chief is responsible for the Management of ALL Incident Tactical Operations</p> <ol style="list-style-type: none"> <li>1. Responsible for the direct management of all incident tactical activities</li> <li>2. Should have direct involvement in the preparation of the action plan for the period of responsibility</li> </ol>	<p>Primary duty of the Operations Section Chief/Deputy?</p>



## CONCEPTS OF ICS ORGANIZATION

-12-

# INSTRUCTOR GUIDE

CONCEPTS OF ICS ORGANIZATION

PRESENTATION	APPLICATION
<p>E. Use of Branches</p> <ul style="list-style-type: none"> <li>Depends on Span of Control or utilization for Functional Use under Unified Command</li> </ul> <p>F. Use of Staging Areas</p> <ul style="list-style-type: none"> <li>Used to locate resources which are available for assignment within three (3) minute availability in a designated location by the Operations Chief</li> </ul> <p>G. Deputy Air Operations Director: established by Operations Chief when</p> <ol style="list-style-type: none"> <li>complexity requires additional support and effort</li> <li>incident requires mix of aircraft for tactical and logistical use</li> </ol> <p>H. Air Attack Supervisor: separate position whenever both helicopters and fixed-wing aircraft will be used simultaneously within the incident air space (airborne aircraft)</p> <p>I. Air Support Supervisor: is responsible for establishing and operating helibases and helispots, and for maintaining the required liaison with the fixed-wing air attack bases off the incident</p>	<p>How quickly must you be available?</p>
<p>IX. Planning Section</p> <p>A. Responsible for</p> <ol style="list-style-type: none"> <li>collection of tactical information about the incident</li> <li>evaluation of tactical information about the incident</li> </ol>	

# INSTRUCTOR GUIDE

CONCEPTS OF ICS ORGANIZATION

PRESENTATION	APPLICATION
<ul style="list-style-type: none"> <li>3. dissemination of tactical information about the incident</li> <li>4. maintains information on the current and forecast situation</li> <li>5. maintains status of resources assigned to incident</li> </ul> <p>B. Resources Unit</p> <ul style="list-style-type: none"> <li>1. Confirms all assigned personnel and resources have checked in at incident</li> <li>2. Maintains system showing current status and current location of all assigned resources</li> <li>3. Maintain master list of all resources</li> </ul> <p>C. Situation Unit</p> <ul style="list-style-type: none"> <li>1. Collects, processes, organizes and displays situation information</li> <li>2. Prepares situation summaries</li> <li>3. Develops projections and forecasts of future events related to incident</li> <li>4. Prepares maps and intelligence information for use in the action plan</li> <li>5. May require the use of Technical Specialists</li> </ul> <p>D. Documentation Unit</p> <ul style="list-style-type: none"> <li>1. Maintains accurate and complete incident files</li> <li>2. Provides duplication services to incident personnel (Xerox)</li> <li>3. Files, maintains and stores incident files for legal, analytical and historical purposes</li> </ul>	

# INSTRUCTOR GUIDE

CONCEPTS OF ICS ORGANIZATION

PRESENTATION	APPLICATION
<p>E. Demobilization Unit</p> <ol style="list-style-type: none"> <li>1. Develops the Incident Demobilization Plan</li> <li>2. Plans to be distributed both at the incident and off-incident locations</li> <li>3. Should begin early in the incident to develop rosters of personnel and resources and thus obtain missing information from the incident check-in process</li> </ol> <p>F. Technical Specialists might provide:</p> <ol style="list-style-type: none"> <li>1. Fire Behavior Specialists</li> <li>2. Meteorologist</li> <li>3. Training Specialist</li> <li>4. Environmental Impact Specialist</li> <li>5. Flood Control Specialist</li> <li>6. Resource Use and Cost Specialist</li> <li>7. Water Use Specialist</li> <li>8. Toxic Substance Specialist(s)</li> <li>9. Structural Specialist</li> <li>10. Fuels and Flammables Specialist</li> <li>11. Nuclear Radiation Fallout Specialist</li> </ol>	

# INSTRUCTOR GUIDE

## CONCEPTS OF ICS ORGANIZATION

PRESENTATION	APPLICATION
<p>a) Technical Specialists may be called upon depending upon the needs of the incident</p> <p>b) Specialists assigned to Planning report directly to the Planning Section Chief</p> <p>c) May function in an existing unit or other parts of the organization either within the command staff or the general staff</p> <p>d) May form a separate Unit depending upon the requirements of the incident needs</p> <p>X. Logistics Section</p> <ul style="list-style-type: none"> <li>• Responsible for             <ol style="list-style-type: none"> <li>1. Provides all support needs to the incident (except air support)</li> <li>2. Orders all off-incident resources</li> <li>3. Provides facilities</li> <li>4. Provides transportation</li> <li>5. Provides supplies and feeding</li> <li>6. Equipment maintenance and fueling</li> <li>7. Provides communications and medical services</li> </ol> </li> </ul>	<p>Where within the ICS organization are Technical Specialists assigned?</p>

# INSTRUCTOR GUIDE

CONCEPTS OF ICS ORGANIZATION

PRESENTATION	APPLICATION
<p>B. Supply Unit</p> <ol style="list-style-type: none"><li>1. Basic responsibility for all off-incident ordering</li><li>2. Orders, receives, stores and processes all incident-related resources</li><li>3. Provides the locations for personnel to receive, process, store and distribute all supply orders</li><li>4. Handles disbursement and servicing of all tools</li></ol> <p>C. Facilities Unit</p> <ol style="list-style-type: none"><li>1. Establishes, sets up, maintains and demobilizes all facilities in support of the incident</li><li>2. Provides facility maintenance required</li><li>3. Provides security services</li><li>4. Will set up the Incident Command Post, the Incident Base and Camps as well as other trailers or shelters which include:<ol style="list-style-type: none"><li>a) Feeding areas</li><li>b) Sleeping areas</li><li>c) Sanitation/Shower areas</li></ol></li></ol>	

# INSTRUCTOR GUIDE

CONCEPTS OF ICS ORGANIZATION

PRESENTATION	APPLICATION
<p>D. Ground Support Unit</p> <ol style="list-style-type: none"> <li>1. Maintains and repairs primary tactical equipment, vehicles and mobile ground support equipment</li> <li>2. Maintains time reporting of all incident assigned equipment (including contract equipment)</li> <li>3. Provides fueling of all mobile equipment</li> <li>4. Provides necessary transportation services (except air)</li> <li>5. Implements an Incident Traffic Plan</li> </ol> <p>E. Communications Unit</p> <ol style="list-style-type: none"> <li>1. Develops plans for the most effective use of incident-assigned communications equipment and facilities</li> <li>2. Installs and tests communication equipment</li> <li>3. Controls supervision and operation of the Incident Communications Center</li> <li>4. Distributes and recovers communication equipment assigned</li> <li>5. Maintains and provides on-site repair of communications equipment</li> </ol> <p>F. Food Unit</p> <ol style="list-style-type: none"> <li>1. Determines food and water requirements, menu planning, food ordering, cooking facilities, cooking, serving and maintenance of food areas</li> <li>2. Responsible for the the entire incident, including all remote locations, as well as supplying food to operations personnel unable to leave tactical assignments</li> </ol>	

# INSTRUCTOR GUIDE

CONCEPTS OF ICS ORGANIZATION

PRESENTATION	APPLICATION
<p>G. Medical Unit</p> <ol style="list-style-type: none"><li>1. Develops the Incident Medical Plan</li><li>2. Develops procedures for handling any major medical emergency involving incident personnel and MAY assist civilian casualties at the incident</li><li>3. Provide medical aid and transportation for incident assigned injured and ill personnel</li><li>4. Assist in processing of all paper work related to injuries or deaths of incident assigned personnel</li></ol> <p>XI. Finance Section</p> <p>A. Responsible for</p> <ol style="list-style-type: none"><li>1. Established on incidents when the agency or agencies who are involved have a specific need for finance services</li><li>2. Position can be established as a Technical Specialist in the Plans Section where only one specific function is required</li></ol> <p>B. Time Unit</p> <ol style="list-style-type: none"><li>1. Ensures that daily personnel time recording documents are prepared</li><li>2. Confirms that agency/agencies time policy is being met</li><li>3. Documents "commissary" expenditures for personnel records</li><li>4. Ensures that equipment time reporting is accomplished in the Logistics Section for Ground Support Unit and in Operations Section for Air Support Unit</li></ol>	



# INSTRUCTOR GUIDE

CONCEPTS OF ICS ORGANIZATION

PRESENTATION	APPLICATION
<p>C. Procurement Unit</p> <ol style="list-style-type: none"> <li>1. Administers all financial matters pertaining to vendor contracts</li> <li>2. Coordinates with local jurisdictions to utilize local resources</li> <li>3. Process all administrative paper work associated with equipment rental and supply contracts</li> </ol> <p>D. Compensation/Claims Unit</p> <ol style="list-style-type: none"> <li>1. Includes Compensation-for-Injury and Claims to maintain logs on claims, obtain witness statements, document investigations and agency follow-up requirements</li> <li>2. Compensation-for-Injury and Claims completes all forms required by workers' compensation programs</li> <li>3. Claims handles the investigation into all civil tort claims associated with or involved in the incident</li> </ol> <p>E. Cost Unit</p> <ol style="list-style-type: none"> <li>1. Obtain and record all cost data</li> <li>2. Analyze and prepare estimates of incident costs and maintain accurate records of incident costs</li> <li>3. Provides cost analysis data for the incident</li> <li>4. Ensures that all pieces of equipment and personnel which require payment are properly identified</li> </ol>	

## SUMMARY

Fighting ground cover fires is a very dangerous occupation. The success or failure of firefighters combating the wildland fires is based on the utilization and development of the Incident Command Structure or Organization.

Identify and understand the basic concepts and principles for developing an organizational system for managing resources on major wildland incidents. These principles are the foundation for coping with and managing "All Risk" type incidents, no matter what classification, size or type of incident firefighters are dealing with on a day to day basis.

## EVALUATION

Students will be evaluated by completing a written examination.

## ASSIGNMENT

To be determined by the instructor(s).

# INSTRUCTOR GUIDE

STATE FIRE AND RESCUE MUTUAL AID PLAN

## WILDLAND FIRE FIGHTING ESSENTIALS

### Lesson Plan # 3

**TOPIC:** State Fire And Rescue Mutual Aid Plan

**LEVEL:** I

**TIME:** 1 hour

**BEHAVIORAL OBJECTIVE:**

**Given:** A written examination

**Performance:** The student will identify the general components of the Mutual Aid Plan

**Standard:** With a minimum 70 % accuracy according to the information given

**REFERENCES:** State of California, Office of Emergency Services, California Fire Service and Rescue Emergency Mutual Aid Plan

**MATERIALS NEEDED:** Appropriate audio/visual equipment and materials

**PREPARATION:** California communities have historically relied upon mutual aid resources in combating fire and other emergency situations exceeding the capability of a single jurisdiction. Since 1950, the California Master Mutual Aid Agreement and the Fire Service and Rescue Emergency Mutual Aid Plan have provided the basis for development of the Statewide Fire and Rescue Mutual Aid System.

Every segment of the fire service has contributed to the development and refinement of the system. Changes, when made, have been based on service wide experience. With continued input and support of the fire services throughout the state, the system stands ready to mitigate the effects of human-caused and natural disaster.

## STATE FIRE AND RESCUE MUTUAL AID PLAN

What is the California Fire Service and Rescue Emergency Mutual Aid Plan?

What is the purpose of the plan?

# INSTRUCTOR GUIDE

STATE FIRE AND RESCUE MUTUAL AID PLAN

PRESENTATION	APPLICATION
<p>II. Planning Basis</p> <ul style="list-style-type: none"> <li>A. No community has resources sufficient to cope with any and all emergencies</li> <li>B. Fire and Rescue officials must preplan emergency operations</li> <li>C. Statewide system of mutual aid</li> <li>D. Agreement between the State, each county, those incorporated cities, and fire protection districts signatory thereto:               <ul style="list-style-type: none"> <li>1. Creates a formal structure for provision of mutual aid</li> <li>2. Provides that no party shall be required to unreasonably deplete its own resources in furnishing mutual aid</li> <li>3. Provides that the jurisdiction shall remain in charge of the incident</li> <li>4. Provides that mutual aid operational plans shall be developed</li> <li>5. Provides for reimbursement</li> </ul> </li> <li>E. State is divided into six mutual aid regions</li> </ul> <p>III. Definitions</p> <ul style="list-style-type: none"> <li>A. Fire and Rescue Resources               <ul style="list-style-type: none"> <li>• Shall include, but not limited to, the necessary personnel, apparatus and equipment under the direct control of the fire and rescue service needed to provide mutual aid assistance for all emergencies</li> </ul> </li> </ul>	<p><u>INSTRUCTOR NOTE</u> Handout - Mutual Aid Regions</p>

## STATE FIRE AND RESCUE MUTUAL AID PLAN

-25-

# INSTRUCTOR GUIDE

STATE FIRE AND RESCUE MUTUAL AID PLAN

PRESENTATION	APPLICATION
<ol style="list-style-type: none"> <li>3. Provide a current annual inventory of all fire department personnel, apparatus, and equipment to the Operational Area Fire and Rescue Coordinator</li> <li>4. Provide for receiving and disseminating information, data, and directives</li> <li>5. Conduct the necessary training to adequately perform their functions and responsibilities during emergencies</li> </ol> <p>V. Responsibilities</p> <p>A. Local (Appropriate Fire and Rescue Administrator)</p> <ol style="list-style-type: none"> <li>1. Directs all action toward stabilizing and mitigating the emergency</li> <li>2. Develops an effective emergency plan for use of the resources under its control</li> <li>3. Makes maximum use of existing facilities and services</li> <li>4. Conducts mutual aid activities</li> <li>5. The agency receiving mutual aid is responsible for logistic support to all mutual aid personnel and equipment received</li> <li>6. During emergency operations, keeps the Operational Area Fire and Rescue Coordinator informed on all matters</li> <li>7. Establishes emergency communications</li> <li>8. Anticipates emergency needs for such items as emergency fire equipment</li> </ol>	<p><u>INSTRUCTOR NOTE</u> Handout - Organization</p>

# INSTRUCTOR GUIDE

STATE FIRE AND RESCUE MUTUAL AID PLAN

PRESENTATION	APPLICATION
<ul style="list-style-type: none"> <li>9. Will be in charge of all manpower and apparatus received</li> <li>10. Provides mutual aid resources when requested</li> <li>11. Maintains appropriate records</li> <li>B. Operational Area (Operational Area Fire and Rescue Coordinator)               <ul style="list-style-type: none"> <li>1. Organize, staff and equip area fire and rescue dispatch centers</li> <li>2. Aid and encourage the development of uniform fire and rescue operational plans</li> <li>3. Maintain an up-to-date inventory system on fire and rescue apparatus and personnel</li> <li>4. Develop a dispatching procedure for all state-owned OES apparatus</li> <li>5. Provide fire and rescue coordination to the OES</li> <li>6. Responsible to aid and assist local, region and state officials</li> <li>7. Responsible for dispatching all OES and/or local fire and rescue resources within the operational area on major mutual aid operations</li> </ul> </li> <li>C. Region (Regional Fire and Rescue Coordinator)               <ul style="list-style-type: none"> <li>1. Assumes responsibilities for coordination and dispatch of regional mutual aid resources</li> <li>2. Organizes, staffs, and equips a Regional Fire and Rescue dispatch center</li> <li>3. Aids, encourages, and approves the development of uniform fire and rescue emergency plans</li> </ul> </li> </ul>	



# INSTRUCTOR GUIDE

STATE FIRE AND RESCUE MUTUAL AID PLAN

PRESENTATION	APPLICATION
<ul style="list-style-type: none"> <li>4. Aids and encourages the development of countywide fire and rescue communication nets</li> <li>5. Maintains an up-to-date inventory system of fire and rescue apparatus and personnel</li> <li>6. Monitors and coordinates backup coverage within an area or region</li> <li>7. Responsible to aid and assist in planning, utilizing, and requesting mobilization centers</li> </ul> <p>D. State</p> <ul style="list-style-type: none"> <li>1. Office of Emergency Services (OES) <ul style="list-style-type: none"> <li>a) Prepares, maintains, and distributes the basic Mutual Aid Plan</li> <li>b) Develops and maintains the operational plan and operating procedures</li> <li>c) Organizes, staffs and equips the State Fire and Rescue dispatch center</li> <li>d) Monitors on going emergency situations</li> <li>e) Monitors and coordinates backup coverage between regions</li> <li>f) Consults with and assists federal and other state agency representatives on all matters of mutual interest</li> <li>g) Coordinates emergency mutual aid operations throughout the state</li> <li>h) Assists agencies in utilizing federal assistance programs</li> <li>i) Develops procedures for reimbursement</li> </ul> </li> </ul>	

# INSTRUCTOR GUIDE

STATE FIRE AND RESCUE MUTUAL AID PLAN

PRESENTATION	APPLICATION
<ul style="list-style-type: none"> <li>j) Standardizes forms and procedures for the records required for response of OES resources</li> <li>2. California Department of Forestry and Fire Protection                             <ul style="list-style-type: none"> <li>a) Provides services for which the state is responsible</li> <li>b) Provides supervision for adult conservation camp inmates, Youth Authority wards, and Conservation Center Corps members</li> <li>c) Maintains a statewide radio and microwave communications system</li> <li>d) Has numerous agreements for contract fire protection, assistance by hire and/or mutual aid</li> </ul> </li> <li>3. State Fire Marshal                             <ul style="list-style-type: none"> <li>a) Assists OES by providing personnel to facilitate coordination of mutual aid</li> <li>b) Cooperates with OES in training Fire Marshal personnel for emergency operations</li> </ul> </li> <li>4. California Conservation Crops                             <ul style="list-style-type: none"> <li>a) The prevention and suppression of fire</li> <li>b) Rescue of lost or injured persons</li> <li>c) Support of other emergency operations</li> </ul> </li> <li>5. California Highway Patrol                             <ul style="list-style-type: none"> <li>a) Emergency highway traffic regulations and control</li> <li>b) Evacuation of residents/inhabitants</li> </ul> </li> </ul>	

# INSTRUCTOR GUIDE

STATE FIRE AND RESCUE MUTUAL AID PLAN

PRESENTATION	APPLICATION
<ul style="list-style-type: none"> <li>c) Incident Commander for highway hazardous materials incidents</li> <li>6. Department of Corrections                             <ul style="list-style-type: none"> <li>a) Supplies inmate personnel to support emergency operations</li> <li>b) Provides congregate care for displaced persons at departmental facilities</li> <li>c) Prepare food for consumption in the disaster area</li> <li>d) Furnishes emergency medical treatment to disaster victims</li> </ul> </li> <li>7. Military Department                             <ul style="list-style-type: none"> <li>a) Air and surface transportation of authorized personnel, equipment, and supplies</li> <li>b) Provision of interim communications</li> <li>c) Surface and aerial reconnaissance and photography</li> <li>d) Mass feeding</li> <li>e) Medical treatment</li> <li>f) Clearance of debris and rubble</li> <li>g) Explosive ordinance disposal</li> <li>h) Search and rescue</li> <li>i) Emergency housing</li> <li>j) Maintain law and order</li> </ul> </li> <li>8. Department of Youth Authority                             <ul style="list-style-type: none"> <li>a) Ward camp crews assist in emergency operations</li> </ul> </li> </ul>	

# INSTRUCTOR GUIDE

STATE FIRE AND RESCUE MUTUAL AID PLAN

PRESENTATION	APPLICATION
<ul style="list-style-type: none"> <li>b) Provides congregate care for displaced persons at departmental facilities</li> <li>c) Prepares food for consumption in the disaster area</li> <li>d) Provides emergency medical treatment</li> </ul>	
<p>VI. Procedures</p> <p>A. Based upon an incremental and progressive system of mobilization</p> <ol style="list-style-type: none"> <li>1. Local Fire and Rescue Resources <ul style="list-style-type: none"> <li>• Resources available through automatic and/or day-to-day mutual aid agreements with neighboring jurisdictions</li> </ul> </li> <li>2. Operational Area Fire and Rescue Resources <ul style="list-style-type: none"> <li>• Made available to a participating agency through the approved and adopted Mutual Aid Plan</li> </ul> </li> <li>3. Regional Fire and Rescue Resources <ol style="list-style-type: none"> <li>a) Includes all resources available to a participating agency through the approved and adopted Mutual Aid Plan</li> <li>b) Activated by the Regional Fire and Rescue Coordinator in response to a request from an Operational Area Fire and Rescue Coordinator</li> </ol> </li> <li>4. Inter-regional Fire and Rescue Resources <ol style="list-style-type: none"> <li>a) Mobilized through the OES Fire and Rescue Coordinator in the afflicted mutual aid region</li> <li>b) Mobilized in strike team mode for inter-regional response</li> </ol> </li> </ol>	

# INSTRUCTOR GUIDE

STATE FIRE AND RESCUE MUTUAL AID PLAN

PRESENTATION	APPLICATION
<ul style="list-style-type: none"> <li>c) OES engines staffed by 3 or more trained fire fighters</li> <li>d) OES Assistant Chief State Fire and Rescue Coordinator will be dispatched when five or more OES engines are activated</li> </ul> <p>5. Dispatch Center</p> <ul style="list-style-type: none"> <li>• Carefully selected and adequately equipped for emergency operations</li> </ul> <p>6. Training</p> <ul style="list-style-type: none"> <li>• The training of regular emergency personnel in specialized skills and techniques is essential if each level of the fire and rescue service is to successfully discharge assigned emergency responsibilities to handle all-risk emergencies</li> </ul> <p>7. Planning</p> <ul style="list-style-type: none"> <li>a) Preparedness</li> <li>b) Response</li> <li>c) Recovery</li> </ul>	<p>Information Sheet - OES Assistant Chief On-Scene duties</p> <p>Allow discussion on position.</p>
<p>VII. Channels For Requesting Resources</p> <p>A. Local Fire Chief</p> <ul style="list-style-type: none"> <li>• Determine needs</li> <li>• Activates local fire and rescue mutual aid plan</li> </ul>	<p>Handout - Channels for requesting resources</p>

# INSTRUCTOR GUIDE

STATE FIRE AND RESCUE MUTUAL AID PLAN

PRESENTATION	APPLICATION
<p>B. Operational Area Fire and Rescue Coordinator</p> <ul style="list-style-type: none"><li>• Evaluate area situation and resources<ul style="list-style-type: none"><li>• Activates area fire and rescue mutual aid plan</li></ul></li></ul> <p>C. Regional Fire and Rescue Coordinator</p> <ul style="list-style-type: none"><li>• Evaluate region situation and resources<ul style="list-style-type: none"><li>• Activates regional fire and rescue mutual aid plan</li></ul></li></ul> <p>D. Chief, State Fire and Rescue Coordinator</p> <ul style="list-style-type: none"><li>• Evaluates statewide situation and available resources<ul style="list-style-type: none"><li>• Coordinates inter-regional fire and rescue resources mobilization</li></ul></li></ul>	

# INSTRUCTOR GUIDE

## SUMMARY

Fire fighters should have a working knowledge of the California Fire Service and Rescue Emergency Mutual Aid Plan. The plan supports the concepts of the Incident Command System (ICS). It is intended that more detailed operational plans supplement this document at the local, area, and regional levels. The California fire and rescue service conducts emergency operations planning at four levels: Local, Operational Area, Regional, and State.

## EVALUATION

The student will be evaluated by completing a written examination.

## ASSIGNMENT

To be determined by the instructor(s).

# STUDENT INFO

## INFORMATION SHEET

TOPIC: OES Assistant Chief: On-scene duties and responsibilities

### INTRODUCTION:

The Assistant Chief will establish communication with the Incident Command staff in an attempt to gather factual information, both immediate and projected. This information will then be passed through the mutual aid system, including the OES Fire and Rescue Division dispatch center in Sacramento. Timely information will assist statewide organization in anticipating needs, alerting resources.

The Assistant Chief can prove to be a valuable asset for the Incident Commander and the Incident staff since he/she is familiar with various resources and personnel in the area.

### INFORMATION:

#### ON-SCENE DUTIES AND RESPONSIBILITIES

At the scene of an emergency, the Assistant Chiefs are responsible for:

1. Establishing contact between all elements of state government and local fire and rescue officials.
2. Movement of inter-regional fire and rescue resources.
3. Direct assistance to small departments with fire and rescue command and control problems, when requested.
4. Acting as agency representative for OES Fire and Rescue Division and the local fire service agencies manning OES state-owned fire apparatus and support equipment on scene.
5. Coordinating OES engine maintenance and repairs on scene. Provide guidance and direction for any matters affecting OES state-owned resources and personnel assigned thereto.
6. Ensuring all OES equipment is properly demobilized, verify the inventory of each resource, collect the Emergency Activity Record for each OES apparatus. Provide contact point for all OES Strike Team Leaders and their personnel. Provide operational and technical information regarding OES Fire and Rescue resources.



# INSTRUCTOR GUIDE

SURVIVING THE STRIKE TEAM RESPONSE

## WILDLAND FIRE FIGHTING ESSENTIALS

### Lesson Plan # 4

TOPIC: **Surviving The Strike Team Response**

LEVEL: II

TIME: 1 hour

#### BEHAVIORAL OBJECTIVE:

Given: A written examination

Performance: The student will identify the equipment needed and general operations utilized during a strike team assignment

Standard: With a minimum 70 % accuracy according to the information given

REFERENCES: OES Emergency Response information

MATERIALS NEEDED: Appropriate audio/visual equipment and materials

PREPARATION: Wildland response can be very exciting and an enjoyable duty assignment for the metropolitan firefighter. But without proper training, preparation and common sense, this response can turn into a tragedy. This lesson will instruct the firefighter in how to prepare for a wildland response, how to use the time assigned to base to your advantage and common guidelines for a strike team member. With these items learned the response can be a very enjoyable and valuable learning experience.

# INSTRUCTOR GUIDE

SURVIVING THE STRIKE TEAM RESPONSE

PRESENTATION	APPLICATION
<ul style="list-style-type: none"> <li>I. Call For The Strike Team                             <ul style="list-style-type: none"> <li>A. Rotational assignments                                     <ul style="list-style-type: none"> <li>1. Agency specific</li> <li>2. Can assist personnel by informing them of potential assignment   <ul style="list-style-type: none"> <li>a) Have personal equipment bag prepared</li> <li>b) Have Strike Team Kit available and ready</li> </ul> </li> </ul> </li> <li>B. Strike Team Request                                     <ul style="list-style-type: none"> <li>1. Local Chief   <ul style="list-style-type: none"> <li>a) Exhausts agencies resources</li> <li>b) Activates Local Fire &amp; Rescue Mutual Aid Plan</li> </ul> </li> <li>2. Area Coordinator   <ul style="list-style-type: none"> <li>a) Handles and supports requests from the Local Chiefs</li> <li>b) Manages and utilizes the resources assigned within the county</li> <li>c) Activates Area Fire &amp; Rescue Mutual Aid Plan</li> </ul> </li> </ul> </li> </ul> </li> </ul>	<p>How are Strike Teams requested from the field?</p>

# INSTRUCTOR GUIDE

## SURVIVING THE STRIKE TEAM RESPONSE

PRESENTATION	APPLICATION
<p>3. Regional Coordinator</p> <ul style="list-style-type: none"> <li>a) Handles and supports requests from the Area Coordinators</li> <li>b) Manages and utilizes the resources assigned within the regional boundaries</li> <li>c) Activates Regional Fire &amp; Rescue Mutual Aid Plan</li> <li>d) Coordinates with OES representatives for resource needs from the State of California</li> </ul> <p>4. State Coordinator</p> <ul style="list-style-type: none"> <li>a) Handles and supports requests from the Regional Coordinators</li> <li>b) Coordinates Inter-Regional Fire and Rescue Resource Mobilization</li> </ul> <p>5. Information Needed for Strike Team</p> <ul style="list-style-type: none"> <li>a) Reporting location</li> <li>b) Time you should arrive (ETA)</li> <li>c) Communications frequency</li> <li>d) Radio designator</li> <li>e) Order/Request number (Very important)               <ul style="list-style-type: none"> <li>• Write it down and verify it</li> </ul> </li> <li>f) May Report to a rendezvous location responding Code 2 or Code 3</li> </ul>	<p>Have students identify Area, Regional and State Coordinators.</p>          <p>What essential information is needed to respond on a Strike Team?</p>

# INSTRUCTOR GUIDE

SURVIVING THE STRIKE TEAM RESPONSE

PRESENTATION	APPLICATION
<p>II. Strike Team Kits</p> <p>A. Personal</p> <p>Items <u>shall</u> include:</p> <p>District issued safety equipment:            Structural: turnout coat, pants, boots, helmet, hood, gloves and personal SCBA Mask            Wildland: pants, jacket, helmet, goggles, gloves            OSHA Safety boots, fire shelter</p> <p>Sleeping bag            Money (Cash and Change) to purchase meals, items of need, and change for phone calls            Medications (lip balm, aspirin, sunscreen, poison oak lotion, eye wash, foot powder, etc.)            . . . if needed            Spare uniform</p> <p>Items <u>may</u> include:</p> <p>Tennis shoes for use at Base            Undergarments, T-shirts and socks            Sweatshirt/Coat/Vest for evening cool weather            Toiletries (round paper, shaving tools, dental items, deodorant, towels)            Insect repellent            AM/FM radio for <u>local</u> news, <u>local</u> weather and <u>local</u> information            Sunglasses, cards or reading material, baseball style hat, knife, sewing kit, space blanket, running and/or swimming gear            Web gear with 2 one quart plastic canteens            Camera and film</p>	<p>What items are mandatory for safety of personnel responding on a Strike Team?</p> <p>List on board</p> <p>What are some personal items that may be desired to take on a Strike Team run?</p> <p>List on board</p>

## SURVIVING THE STRIKE TEAM RESPONSE

-40-

# INSTRUCTOR GUIDE

SURVIVING THE STRIKE TEAM RESPONSE

PRESENTATION	APPLICATION
<p>IV. Check-In</p> <p>A. On the Line or in the Field (Immediate Need)</p> <ol style="list-style-type: none"> <li>1. Dependant on Needs of Resources</li> <li>2. Dependant on development of the ICS Structure</li> <li>3. May report at a Rendezvous Point to form up Strike Team</li> </ol> <p>May Report to one of the following:</p> <ol style="list-style-type: none"> <li>a) Division or Group</li> <li>b) Staging</li> <li>c) Camp</li> <li>d) Helibase or Helispot</li> </ol> <p>B. Base (Check-In Recorder must Know) Eventually the following info should be obtained:</p> <ol style="list-style-type: none"> <li>1. Agency</li> <li>2. Name (Designator)</li> <li>3. Assignment</li> <li>4. Other ICS Qualifications</li> <li>5. Where are you from</li> <li>6. Type of Transportation</li> <li>7. Order/Request Number</li> </ol> <p>C. Get Assignment/Brief Personnel</p> <ol style="list-style-type: none"> <li>1. Responsibilities</li> <li>2. Co-Workers</li> <li>3. Work Area</li> <li>4. Feeding and Sleeping</li> <li>5. Services and Supplies</li> <li>6. Workshift</li> <li>7. Questions</li> </ol>	<p>What essential information is needed by the Check-In Recorder?</p>

# INSTRUCTOR GUIDE

SURVIVING THE STRIKE TEAM RESPONSE

PRESENTATION	APPLICATION
<p>V. Performance In Base</p> <p>A. Equipment</p> <ol style="list-style-type: none"> <li>1. Check all fluid levels and fill if needed (tank water, fuel, radiator coolant, oil)</li> <li>2. Safety check apparatus for operation or immediate assignment</li> <li>3. Replace equipment lost or damaged</li> <li>4. Water additives, if used</li> <li>5. Report Status Changes immediately to Strike Team Leader</li> <li>6. Equipment is Available even though you are assigned to Base "Out of Service"</li> </ol> <p>B. Personnel Needs</p> <ol style="list-style-type: none"> <li>1. Secure food and liquids for work period as assigned</li> <li>2. Secure supplies from Supply Unit (Logistics), if specialized equipment is needed for assignment (shelters, chain saw, hand tools, fusees, etc.) Equipment is to be returned when finished with assignment or released Coordinate with Strike Team Leader</li> <li>3. Identify showers and if there are restrictions on use (ie. Inmate crews, female/male)</li> <li>4. Stay together as a Strike Team Eat together as a Strike Team Rest together as a Strike Team</li> <li>5. Phone calls or other: Be available by portable radio or runner in case of immediate need</li> <li>6. Obtain rest in designated areas (Area is designated and located for safety with least amount of noise)</li> </ol>	<p>When we first arrive in Base, what are some priorities for getting back in service?</p> <p>What are some personal needs that can be taken care of at Base?</p>

# INSTRUCTOR GUIDE

SURVIVING THE STRIKE TEAM RESPONSE

PRESENTATION	APPLICATION
<p>7. Personnel are Available even though you are assigned to Base "Out of Service" for R &amp; R</p> <p>VI. Command Post</p> <p>A. Observe Situation Board for Information that can effect you and your Personnel</p> <p>Note the following:</p> <ol style="list-style-type: none"> <li>1. Obtain information from posted Action Plan</li> <li>2. Safety hazards on the line</li> <li>3. Weather conditions for the Operational period and predicted weather conditions</li> <li>4. Resources committed on the incident</li> <li>5. Information regarding other incidents in your area               <ol style="list-style-type: none"> <li>a) May determine your response to other incidents in area</li> <li>b) thus determines your expected return to home unit</li> </ol> </li> </ol> <p>B. Communicate</p> <ol style="list-style-type: none"> <li>1. Contact home unit at least once every 24 hours to advise status and conditions, agency specific</li> <li>2. Coordinate relief needs</li> </ol>	<p>What information can be obtained from the Situation Board?</p> <p>Don't forget to call home and home unit.</p> <p>When would calling be necessary?</p>



# INSTRUCTOR GUIDE

SURVIVING THE STRIKE TEAM RESPONSE

PRESENTATION	APPLICATION
<p data-bbox="272 289 971 321">C. Optimum Safety Includes Personal Condition</p> <ol style="list-style-type: none"><li data-bbox="326 365 1016 470">1. OES, CDF and Other Agencies have a policy regarding availability of resources committed to an incident</li><li data-bbox="326 514 789 546">2. May NOT be formal or written</li></ol> <p data-bbox="367 590 1019 768">Personnel caught in a condition or state were Single Resources, Strike Teams or Task Forces are unable to respond for what ever reason <u>will</u> be placed immediately out of service</p> <p data-bbox="367 812 1013 953">Equipment or personnel will be placed out of service in Base with the Agencies Administration being notified for immediate Relief Crews</p> <p data-bbox="367 997 1016 1102">Agencies could be in jeopardy of losing their payment for the period that Crews are "Out of Service"</p>	

# INSTRUCTOR GUIDE

## SUMMARY

Wildland response can be very busy or very boring, in either case following these guidelines will make your response easier and safer. Just by being properly packed for the response, knowing how Base works and what to do while assigned there will keep you mentally aware of the fire problem instead of thinking when you will get to go home or receive relief because you weren't prepared.

## EVALUATION

Students will be evaluated by completing a written examination.

## ASSIGNMENT

To be determined by the Instructor(s).

## CODE OF CONDUCT FOR STRIKE TEAMS

1. No alcohol or drugs will be transported or consumed.
2. Normal radio ethics will be utilized. Radio Traffic between units will be kept to a minimum.
3. Don't make it a vacation.
4. Know who you are working for.
5. Limit the procurement of equipment to what is needed.
6. Do not steal. All equipment must be returned before you are demobilized.
7. Crews will maintain a state of readiness even when not assigned.
8. Recreation will be limited to unassigned hours.
9. Maintain and wear all safety clothing.
10. Wear the proper uniform while in the Incident Base.
11. Your actions are a reflection of your organization.

# INSTRUCTOR GUIDE

SACRAMENTO COUNTY STRIKE TEAM  
S.O.P.S

---

## WILDLAND FIRE FIGHTING ESSENTIALS

### Lesson Plan # 5

**TOPIC:** Sacramento County Strike Team S.O.P.s

**LEVEL:** I

**TIME:** 1 hour

**BEHAVIORAL OBJECTIVE:**

**Given:** A written examination

**Performance:** The student will demonstrate a working knowledge of the Sacramento County Strike Team P.P.M.'s

**Standard:** With a minimum 70 % accuracy according to Sacramento County Fire District Policy and Procedures Manual 222.701, August 30, 1991

**REFERENCES:** Sacramento County Fire District Policy and Procedures Manual 222.701, August 30, 1991

**MATERIALS NEEDED:** Appropriate audio/visual equipment and materials

**PREPARATION:** Within the last few years there has been an increase in the frequency of calls for mutual aid outside of our district and county. It has become necessary to establish guidelines within our district just for these type of runs. The guidelines will establish the crew schedules and the procedure for this type of call.

# INSTRUCTOR GUIDE

SACRAMENTO COUNTY STRIKE TEAM  
S.O.P.S

PRESENTATION	APPLICATION
<p>I. OES And Mutual Aid Responses</p> <p>A. Crew schedule procedures</p> <ol style="list-style-type: none"> <li>1. Three (3) crews one from each battalion will be on standby each day</li> <li>2. First crew will have responsibility for manning the OES</li> <li>3. Second and third crews will be available for additional engine requests</li> <li>4. In the event that the first crew is unavailable the next engine in rotation will respond</li> <li>5. Any crew committed to an incident for more than 24 hours will be placed at the bottom of the list</li> <li>6. Less than 24 hours; they will maintain their rotational location on the list</li> <li>7. A crew is defined as the regular assigned crew for the on call company, not to exceed three (3) personnel</li> <li>8. Exception to the above if there is a Code 3 response in County or neighboring County, the personnel in the station where the OES engine is assigned will take the response</li> <li>9. All responding personnel will have ALL District safety equipment on the apparatus before they respond. The Captain will take one portable radio from their normally assigned engine</li> </ol>	<p>Show overhead of schedule</p> <p>What equipment is mandatory for response?</p>

# INSTRUCTOR GUIDE

SACRAMENTO COUNTY STRIKE TEAM  
S.O.P.S

PRESENTATION	APPLICATION
<p>B. Move up by assigned crews</p> <ol style="list-style-type: none"> <li>1. Will be code 2</li> <li>2. The move up crew will leave their normally assigned engine at the move up location</li> <li>3. Call back relief will pick up the engine at that location</li> <li>4. The OES engine always goes in the direction of dispatch. (i.e. The OES engine is at Station 24. Engine 65 crew is dispatched for an incident south of Station 65, Station 24 crew will respond the OES engine to Station 65. If the call was north of Station 24, Station 65 would respond to Station 24 and pick-up the OES engine)</li> <li>5. The District will attempt to keep families advised of crew status</li> </ol> <p>C. Relief crews</p> <ul style="list-style-type: none"> <li>• Will be routinely provided every 3 days ( 72 hours)             <ol style="list-style-type: none"> <li>a) Unless circumstances exist that require longer periods</li> <li>b) This period may be shortened if fatigue or other circumstance exists</li> <li>c) Relief crews will be selected from the rotation list for the specific day of relief</li> <li>d) Crews will be expected to be in appropriate uniforms</li> </ol> </li> </ul>	<p>How often will relief crews be rotated?</p> <p>What is the expected clothing or attire?</p>

# INSTRUCTOR GUIDE

SACRAMENTO COUNTY STRIKE TEAM  
S.O.P.S

PRESENTATION	APPLICATION
<ul style="list-style-type: none"><li>e) Call back coverage will be from the Short Callback List<ul style="list-style-type: none"><li>• Short Callback List as identified by M.O.U. is the list used for 12 hours or less</li></ul></li></ul> <p>II. Return From Mutual Aid Responses</p> <p>A. Engines returned from an incident</p> <ul style="list-style-type: none"><li>• The B/C from the appropriate battalion will ensure that the apparatus is placed back in service<ul style="list-style-type: none"><li>a) During normal working hours ( 0800-1700) a complete clean-up will be provided</li><li>b) After hours the engine will be placed in serviceable condition</li><li>c) Returning crews who have been on an incident for more than 24 hours will not be held over for clean-up</li></ul></li></ul>	<p>Who is responsible to confirm apparatus is placed back in service?</p>

# INSTRUCTOR GUIDE

SACRAMENTO COUNTY STRIKE TEAM  
S.O.P.S

PRESENTATION	APPLICATION
<p>B. Personnel unable to respond</p> <ul style="list-style-type: none"><li>• Since OES engines are scheduled in advance, a crew member shall have the option of not going on an OES assignment using the following guidelines<ul style="list-style-type: none"><li>a) In two (2) Company Stations, try to swap with someone of equal rank from the other Company. The swap will be for the entire shift</li><li>b) Single Company Stations or Two (2) Company Stations were the swap could not be worked out, it is the responsibility of the individual to tell their Battalion Chief the shift prior to the OES rotation</li><li>c) The Battalion Chief will select an individual of the same rank from the Battalion, based on seniority and qualifications</li><li>d) The person accepting the OES assignment will be transferred to the Company on the OES stand-by and the person that did not wish to go will fill in at the Company where the replacement came from</li><li>e) If an unforeseen problem arises and the member finds they cannot respond for one shift or the remainder of that shift, the same procedure will be used as in "c" above (Battalion Chief will select an individual...)</li></ul></li></ul>	



# INSTRUCTOR GUIDE

SACRAMENTO COUNTY STRIKE TEAM  
S.O.P.S

---

## SUMMARY

Having standard operating procedures in place will help stop any confusion during a call for an OES or mutual aid strike team. When time can be of the essence a crew that can get out quickly could mean the difference between a successful mission or not.

## EVALUATION

The student will be evaluated by completing a written examination.

## ASSIGNMENT

To be determined by the instructor(s).

# INSTRUCTOR GUIDE

## WILDLAND FIRE TERMINOLOGY

---

### WILDLAND FIRE FIGHTING ESSENTIALS

#### Lesson Plan # 6

**TOPIC:** Wildland Fire Terminology

**LEVEL:** I

**TIME:** 30 minutes

**BEHAVIORAL OBJECTIVE:**

**Given:** A written examination

**Performance:** The student will identify the terminology used on wildland fires

**Standard:** With a minimum 70 % accuracy according to the information outlined in the lesson plan

**REFERENCES:** IFSTA Manual, Ground Cover Firefighting Practices, 2nd Edition Wildland Firefighting, Clayton-Day-McFadden, 1986, Published by State of California, Office of Procurement

**MATERIALS NEEDED:** Appropriate audio/visual equipment and materials

**PREPARATION:** Ground cover fires can take many shapes and forms and all are influenced by the weather, fuel, and topography. As the fire begins to take shape, the parts of a fire develop. It is important to you as a firefighter to learn the terminology used on these fires, so that you can describe these areas during critical situations. The safety of you and your crew may depend on quickly identifying your position or a position of safety.

# INSTRUCTOR GUIDE

## WILDLAND FIRE TERMINOLOGY

PRESENTATION	APPLICATION
<p>I. Parts of a Wildland Fire</p> <p>A. Rear</p> <ol style="list-style-type: none"><li>1. Sometimes known as the Heel or point of origin</li><li>2. Usually burns slowly and quietly<ul style="list-style-type: none"><li>• Good spot for an anchor point</li></ul></li></ol> <p>B. Flanks</p> <ol style="list-style-type: none"><li>1. The sides of a ground fire</li><li>2. Looking from the rear towards the head are known as right and left flanks<ol style="list-style-type: none"><li>a) Attempt to identify fastest moving flank to initiate proper tactic and strategy</li><li>b) ICS: flanks are broken up by maintaining span of control and identifying them with letters for Divisions (i.e. Division A and Division B)</li></ol></li></ol> <p>C. Fingers</p> <ol style="list-style-type: none"><li>1. Narrow strips extending out from the main fire</li><li>2. Occurs when fires hit both light and heavy fuels.<ul style="list-style-type: none"><li>• The lighter fuels burn quicker thus making fingers</li></ul></li></ol> <p>D. Head</p> <ul style="list-style-type: none"><li>• The area where the fire is burning the fastest or hottest</li><li>• Remember that there can be more than one head</li></ul>	

# INSTRUCTOR GUIDE

## WILDLAND FIRE TERMINOLOGY

PRESENTATION	APPLICATION
<p>E. Hot Spots</p> <ol style="list-style-type: none"><li>1. A spot or spots along the fire perimeter</li><li>2. Burns more vigorously than the rest</li></ol> <p>F. Spot Fires</p> <ol style="list-style-type: none"><li>1. Fires that start outside the main fire perimeter</li><li>2. Ignited by hot embers from the main fire<ol style="list-style-type: none"><li>a) Can be indicators of changing fire behavior</li><li>b) Observe "Situations that Shout Watchout"</li></ol></li></ol> <p>G. Burn</p> <ul style="list-style-type: none"><li>• The burned area inside the fire's perimeter</li></ul> <p>H. Green</p> <ul style="list-style-type: none"><li>• The area of unburned fuel outside the fire perimeter</li></ul> <p>I. Island</p> <ul style="list-style-type: none"><li>• An unburned area within the fire's perimeter</li></ul> <p>J. Pocket</p> <ol style="list-style-type: none"><li>1. An area of unburned fuel between two fingers</li><li>2. Or between a finger and the main fire perimeter</li></ol>	

# INSTRUCTOR GUIDE

## WILDLAND FIRE TERMINOLOGY

PRESENTATION	APPLICATION
<p>K. Direct Attack</p> <ol style="list-style-type: none"><li>1. Constructing a fire line on or along the edge of the fire</li><li>2. Either handline or hose lays</li></ol> <p>L. Indirect attack</p> <ol style="list-style-type: none"><li>1. Constructing line in unburned fuel at a considerable distance from the fire line</li><li>2. Utilized for defensive operations</li></ol> <p>II. Wildland Operational terminology</p> <p>A. Area Ignition</p> <ol style="list-style-type: none"><li>1. Ignition of a number of individual fires throughout an area either simultaneously or in quick succession</li><li>2. Spaced so that they influence and support each other</li><li>3. Produces fast , hot spread of fire throughout the area</li></ol> <p>B. Blowup</p> <ol style="list-style-type: none"><li>1. Sudden increase in fire intensity or rate of spread</li><li>2. Precludes direct control or upsets existing control plans</li><li>3. Accompanied by violent convection</li><li>4. Characteristics of a fire storm</li></ol>	<p><u>INSTRUCTOR NOTE</u> Have students identify the parts of a fire</p>

# INSTRUCTOR GUIDE

WILDLAND FIRE TERMINOLOGY

PRESENTATION	APPLICATION
<p>C. Burn index</p> <ol style="list-style-type: none"> <li>1. Number in an arithmetic scale determined from               <ol style="list-style-type: none"> <li>a) Fuel moisture content</li> <li>b) Wind speed</li> <li>c) Other selected factors effecting burning rate</li> </ol> </li> <li>2. Ease of ignition of fires and their behavior may be estimated</li> </ol> <p>D. Burning out</p> <ol style="list-style-type: none"> <li>1. Part of the indirect or parallel method of fire control</li> <li>2. Consist of removing unburned fuel within the fire line</li> </ol> <p>E. Backfire</p> <ol style="list-style-type: none"> <li>1. Fire set along inner edge of a fire line               <ul style="list-style-type: none"> <li>• Towards a going fire</li> </ul> </li> <li>2. Expectation that it will be influenced by the advancing main fire</li> <li>3. Tactic usually used only when other fire control methods are judged impractical</li> <li>4. Not the same as burning out</li> </ol> <p>F. Cold trailing</p> <ol style="list-style-type: none"> <li>1. Method of controlling a partly dead fire</li> <li>2. Carefully inspecting and feeling with the hand</li> <li>3. Digging out every live spot</li> <li>4. Trenching any live edge</li> </ol>	

# INSTRUCTOR GUIDE

WILDLAND FIRE TERMINOLOGY

PRESENTATION	APPLICATION
<p>G. Crown fire</p> <ol style="list-style-type: none"><li>1. Fire that advances from top to top of trees or shrubs</li><li>2. Independently of the surface fire</li><li>3. Classed as either running or dependent<ul style="list-style-type: none"><li>• Distinguishes the degree of independence from the surface fire</li></ul></li></ol> <p>H. Fire danger rating</p> <ol style="list-style-type: none"><li>1. Fire Control Management System</li><li>2. Integrates the effects of selected fire danger factors in to one or more qualitative or numerical indices of current protection needs</li></ol> <p>I. Fire whirl</p> <ol style="list-style-type: none"><li>1. A spinning, moving column of ascending air rising from a vortex</li><li>2. May carry aloft smoke, debris, and flames</li><li>3. Range in size from a foot in diameter to small tornado in size and intensity</li></ol> <p>J. Foehn</p> <ul style="list-style-type: none"><li>• A dry wind with strong downward component<ol style="list-style-type: none"><li>a) Santa Ana</li><li>b) North</li><li>c) Mono</li><li>d) Chinook</li></ol></li></ul>	

# INSTRUCTOR GUIDE

## WILDLAND FIRE TERMINOLOGY

PRESENTATION	APPLICATION
<p>K. Hot spotting</p> <ol style="list-style-type: none"><li>1. Checking the spread of fire at points of more rapid spread or special threat</li><li>2. Usually the initial step in prompt control</li><li>3. Emphasis on first priorities</li></ol> <p>L. Scratch line</p> <ol style="list-style-type: none"><li>1. An unfinished preliminary control line</li><li>2. Established or constructed as an emergency measure to check the spread of fire</li></ol> <p>M. Spread index</p> <ul style="list-style-type: none"><li>• a number related to the relative rate of forward movement of surface fires</li></ul>	



# INSTRUCTOR GUIDE

## SUMMARY

Knowing the correct terminology on a wildland fire will increase the effectiveness of the communication used, this creates a safe environment for all to work in.

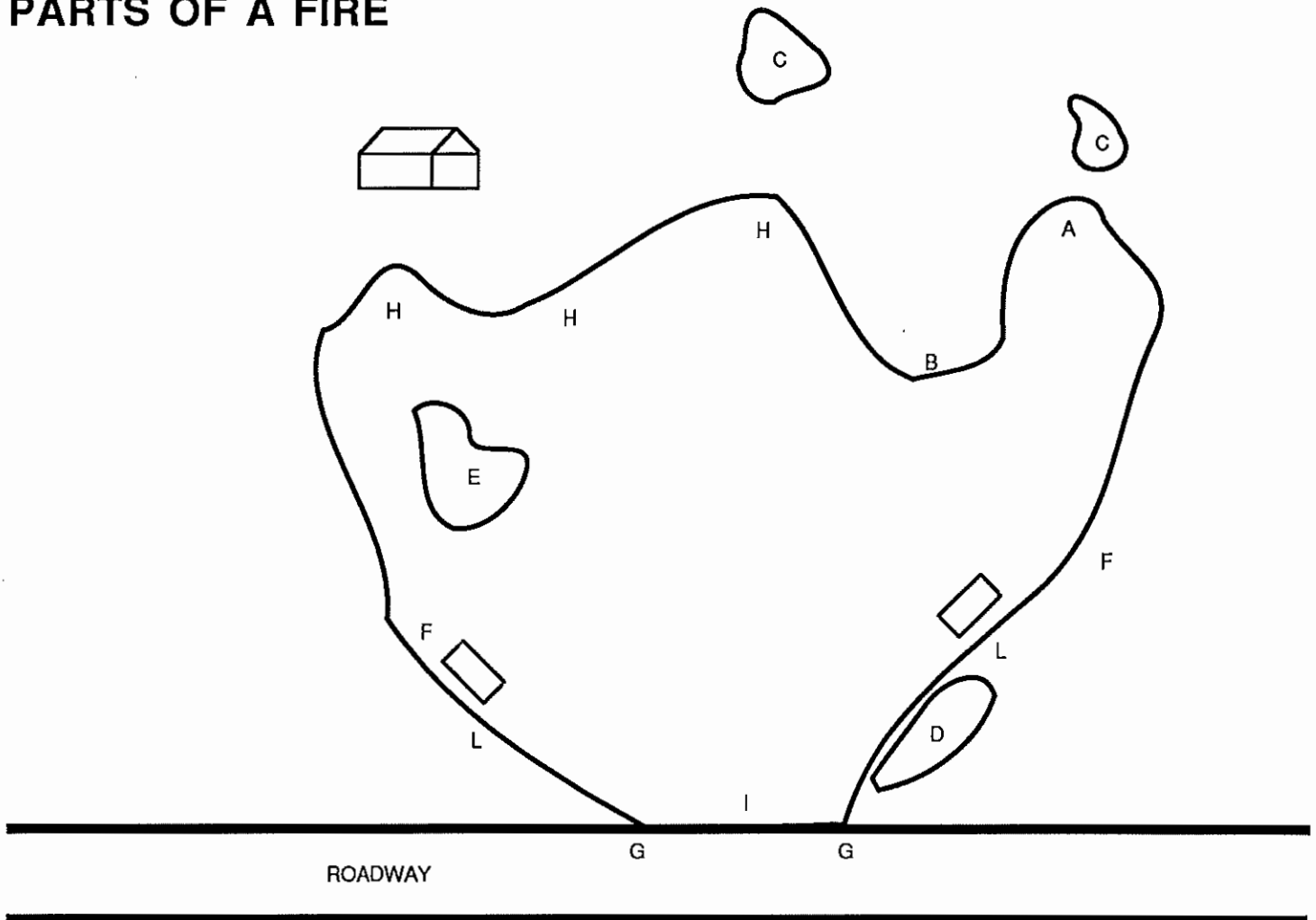
## EVALUATION

The student will be evaluated by completing a written examination.

## ASSIGNMENT

To be determined by the instructor(s).

## PARTS OF A FIRE



- A. FINGER
- B. POCKET
- C. SPOT FIRE
- D. SLOP OVER
- E. ISLAND
- F. FLANK
- G. ANCHOR POINT
- H. HEAD
- I. HEEL OR AREA OF ORIGIN

# INSTRUCTOR GUIDE

FACTORS AFFECTING WILDLAND FIRES

---

## WILDLAND FIRE FIGHTING ESSENTIALS

### Lesson Plan # 7

**TOPIC:** Factors Affecting Wildland Fires

**LEVEL:** II

**TIME:** 1 hour

#### **BEHAVIORAL OBJECTIVE:**

**Given:** A written examination

**Performance:** The student will interpret the factors relating to wildland incidents and their affects on wildland fires

**Standard:** With a minimum 70 % accuracy according to IFSTA , Ground Cover Firefighting Practices, and State of California, Wildland Firefighting

**REFERENCES:** IFSTA Manual, Ground Cover Firefighting Practices, 2nd Edition. Wildland Firefighting. Clayton-Day-McFadden, 1986, Published by State of California, Office of Procurement

**MATERIALS NEEDED:** Appropriate audio/visual equipment and materials

**PREPARATION:** A wildland fire with no outside factors affecting it will tend to grow in a circle, spreading evenly in all directions. Unfortunately, very few fires spread in this manner.

The factors that affect wildland fires can cause a small innocent looking fire to spread extremely fast, placing firefighters in a life threatening situation.

Do you know what these factors are and how they affect wildland fires? Knowing these factors and their effects will keep you out of potential life threatening situations.

# INSTRUCTOR GUIDE

## FACTORS AFFECTING WILDLAND FIRES

PRESENTATION	APPLICATION
<p>I. Factors Which Affect Wildland Fires:</p> <ul style="list-style-type: none"> <li>A. Fuel</li> <li>B. Weather</li> <li>C. Topography</li> </ul> <p>II. In North America There Are Several Hundred Common Vegetation Types That Can Be Classified As Flammable Fuels</p> <ul style="list-style-type: none"> <li>A. These fuels can be classified by:               <ul style="list-style-type: none"> <li>1. Weight of live fuel (tons per acre)</li> <li>2. Size and height</li> <li>3. Geographic location</li> <li>4. Plant family</li> <li>5. Position on ground or in the air</li> </ul> </li> <li>B. Common method of classification is to group fuels according to their position on the ground or in the air.               <ul style="list-style-type: none"> <li>1. Ground fuels</li> <li>2. Surface fuels</li> <li>3. Crown fuels</li> </ul> </li> </ul>	<p>What are the three major factors which affect wildland fire behavior?</p> <p>Allow discussion</p> <p>What are some ground fuels?</p>

# INSTRUCTOR GUIDE

FACTORS AFFECTING WILDLAND FIRES

PRESENTATION	APPLICATION
<p>C. Ground fuels (fuels that are laying on the ground)</p> <ol style="list-style-type: none"> <li>1. Small twigs</li> <li>2. Leaves</li> <li>3. Needles</li> <li>4. Duff (decomposition material)</li> </ol> <p>D. Surface fuels (low level live fuel)</p> <ol style="list-style-type: none"> <li>1. Grass</li> <li>2. Field crops</li> <li>3. Brush</li> <li>4. Small trees</li> </ol> <p>E. Crown fuels (fuels that are above the ground fuels)</p> <ol style="list-style-type: none"> <li>1. Suspended fuels</li> <li>2. Upright fuels               <ol style="list-style-type: none"> <li>a. large trees</li> <li>b. large vegetation</li> </ol> </li> <li>3. Leaves and needles</li> </ol>	
<p>III. The Size Of The Fuel Determines The Ease Of Ignition And Rate Of Burning</p> <p>A. Light fuels or flash fuels ignite easily and burn fast</p> <ol style="list-style-type: none"> <li>1. Dry grass, dead leaves</li> <li>2. Brush, small trees</li> <li>3. Serve as kindling for heavier fuels</li> </ol>	<p>Does the size of the fuel affect the spread of wildland fires?</p>

# INSTRUCTOR GUIDE

FACTORS AFFECTING WILDLAND FIRES

PRESENTATION	APPLICATION
<p>B. Heavy fuels are slow burning and usually ignited by fires involving light fuels</p> <ol style="list-style-type: none"> <li>1. Limbs, logs, stumps</li> <li>2. Deep duff</li> <li>3. Give off large amount of heat</li> <li>4. More difficult to extinguish than light fuels</li> </ol> <p>IV. Compact Fuels Have Less Air Available So They Tend To Burn More Slowly</p> <ol style="list-style-type: none"> <li>A. Dense ground fuels</li> <li>B. Duff</li> </ol> <p>V. The Continuity Of The Fuels Affects The Spread Of Wildland Fires</p> <ol style="list-style-type: none"> <li>A. Patchy, scattered fuel separated by natural barriers               <ol style="list-style-type: none"> <li>1. Spread is slow</li> <li>2. Transfer of heat is not sufficient to preheat or ignite surrounding fuels</li> </ol> </li> <li>B. When fuels are close together               <ol style="list-style-type: none"> <li>1. Fire will spread faster</li> <li>2. Effect of heat transfer</li> </ol> </li> </ol>	<p>Why do compact fuels burn slowly?</p>

# INSTRUCTOR GUIDE

## FACTORS AFFECTING WILDLAND FIRES

PRESENTATION	APPLICATION
<p>VI. The Volume Of Fuel Determines How Intense The Fire Will Burn</p> <ul style="list-style-type: none"> <li>A. Large volumes of fuels will produce tremendous amounts of heat</li> <li>B. Small volumes of fuels will produce much less heat</li> </ul> <p>VII. Weather Factors Which Influence Wildland Fires:</p> <ul style="list-style-type: none"> <li>A. Wind</li> <li>B. Temperature</li> <li>C. Relative humidity</li> <li>D. Precipitation</li> </ul> <p>VIII. Causes Of Wind</p> <ul style="list-style-type: none"> <li>A. Uneven heating of air</li> <li>B. Warm air expands and rises</li> <li>C. Cooler, heavier air descends</li> <li>D. Earth's rotation, air moving from west to east</li> </ul>	<p>Does the volume of fuel affect wildland fires?</p> <p>What are some of the weather factors which influence wildland fire behavior?</p> <p>What causes wind?</p>

# INSTRUCTOR GUIDE

FACTORS AFFECTING WILDLAND FIRES

PRESENTATION	APPLICATION
<p>IX. High And Low Pressure Systems Affect Wind Velocity, Direction And Temperature</p> <ul style="list-style-type: none"> <li>A. Air flow is counterclockwise in a low pressure area</li> <li>B. Air flow is clockwise in a high pressure area</li> <li>C. Useful Rule of Thumb: "Back to the wind, high pressure on right side"</li> </ul>	<p>Allow discussion</p>
<p>X. Topographic Features That Influence Wind</p> <ul style="list-style-type: none"> <li>A. Large bodies of water, lakes or oceans                             <ul style="list-style-type: none"> <li>1. Wind tends to blow out over water as land cools faster than water</li> <li>2. Wind tends to blow inland as sun warms up the land</li> </ul> </li> <li>B. Mountains tend to act like chimneys                             <ul style="list-style-type: none"> <li>1. When slopes warm up, air flow moves upslope</li> <li>2. When slopes cool down, air flows moves downslope</li> </ul> </li> </ul>	<p>What are some effects that winds have on wildland fires?</p> <p>Allow discussion</p>
<p>XI. Effects Of Wind On Wildland Fires</p> <ul style="list-style-type: none"> <li>A. Winds cause wildland fires to . . .                             <ul style="list-style-type: none"> <li>1. Spread faster and unevenly</li> <li>2. Burn more intensely</li> <li>3. Wind carries embers which may cause spot fires</li> </ul> </li> </ul>	



# INSTRUCTOR GUIDE

FACTORS AFFECTING WILDLAND FIRES

PRESENTATION	APPLICATION
<p>B. Drying of fuels</p> <ul style="list-style-type: none"> <li>• Accelerating evaporation of the fuels moisture</li> </ul> <p>C. Winds changes direction quickly and without warning jeopardizing . . .</p> <ol style="list-style-type: none"> <li>1. Control of the fire</li> <li>2. Firefighters</li> </ol> <p>XII. Wildland Fires Will Create Their Own Winds Which Will Add To The Wind Conditions</p> <ul style="list-style-type: none"> <li>• Keep constant watch on wind conditions</li> </ul> <p>XIII. Atmospherically Temperatures Has Many Effects On Wildland Fires</p> <p>A. Warm and hot air</p> <ol style="list-style-type: none"> <li>1. Absorbs more moisture</li> <li>2. Dries the fuels</li> <li>3. Preheats the fuels</li> <li>4. Fires burn hotter</li> </ol> <p>B. Cool air</p> <ol style="list-style-type: none"> <li>1. Holds less moisture</li> <li>2. Dampens fuel</li> <li>3. Fires slow down rate of spread</li> </ol>	<p>What is relative humidity?</p>

# INSTRUCTOR GUIDE

FACTORS AFFECTING WILDLAND FIRES

PRESENTATION	APPLICATION
<p>XIV. Relative Humidity Is The Amount Of Moisture In The Air, Compared With The Amount Of Moisture That The Air Can Hold</p> <p>A. Temperature can affect the relative humidity</p> <ol style="list-style-type: none"> <li>1. Hot air holds more moisture</li> <li>2. Cool air holds less moisture</li> </ol> <p>B. Fuels are affected</p> <ol style="list-style-type: none"> <li>1. Absorbs moisture from cool air</li> <li>2. Gives off moisture to hot air</li> </ol> <p>C. 30% relative humidity favorable for burning</p> <p>D. 10% relative humidity, fire danger becomes critical</p> <p>E. Rule of Thumb:</p> <ol style="list-style-type: none"> <li>1. Every 20 degrees increase in the temperature, humidity drops by half</li> <li>2. Inverse is true</li> </ol>	<p>Allow discussion</p>
<p>XV. While Precipitation Has Little Direct Effect On The Flame, It Does Affect The Condition Of Fuels</p> <p>A. Amount of rain absorbed by the soil</p> <ol style="list-style-type: none"> <li>1. Determines length of the growing season</li> <li>2. Determines amount of moisture in the fuels</li> </ol>	<p>Does the amount of rainfall affect the fire spread?</p>

# INSTRUCTOR GUIDE

## FACTORS AFFECTING WILDLAND FIRES

PRESENTATION	APPLICATION
<p>B. Prolonged dry spell</p> <ol style="list-style-type: none"> <li>1. Will considerably reduce the moisture in the fuel</li> <li>2. Occasional showers will do little to relieve the fire danger</li> </ol> <p>C. Rain or damp season</p> <ol style="list-style-type: none"> <li>1. Flash fuels dry out quickly</li> <li>2. Heavy fuels retain moisture, slowing down the rate of fire spread</li> </ol> <p>XVI. Topography Refers To The Slope Of The Land</p> <p>XVII. The Steepness Of The Slope Affects Both The Rate And Direction Of The Fire</p> <p>A. Fires move faster uphill</p> <ol style="list-style-type: none"> <li>1. Flames are closer to the fuel, preheating, drying the fuel</li> <li>2. Normal uphill winds push heat and flames into new fuel</li> <li>3. Convection heat rising along the slope causes a draft which increases the rate of spread</li> </ol> <p>B. Fires move slower downhill</p> <ul style="list-style-type: none"> <li>• Burning embers and chunks may roll downhill, starting new fires</li> </ul> <p>C. Wildland fires spread much faster uphill than on level ground</p>	<p>What is meant by the word "Topography"?</p>

# INSTRUCTOR GUIDE

## FACTORS AFFECTING WILDLAND FIRES

PRESENTATION	APPLICATION
<p>XVIII. The Direction The Slope Faces Has Some Bearing On The Fire Spread And Its Behavior</p> <p>A. Full Southern Exposure</p> <ol style="list-style-type: none"> <li>1. Sun's rays shine more directly</li> <li>2. Higher temperatures</li> <li>3. Lower humidity</li> <li>4. Dry, light, flashy-type fuel is produced</li> </ol> <p>B. Southeastern, Southwestern, Western exposures</p> <ul style="list-style-type: none"> <li>• Equal amount of solar heating as sun progresses to the west</li> </ul> <p>C. Northern exposure</p> <ol style="list-style-type: none"> <li>1. Cooler temperatures</li> <li>2. Higher humidity</li> <li>3. Larger, slower burning fuels</li> </ol>	<p>How does the slopes direction of facing exposures affect wildland fires?</p> <p>Allow discussion</p>
<p>XIX. Local Terrain And Land Features Have A Direct Effect On Air Movements</p> <p>A. Restrictions such as a saddle or narrow canyon</p> <ol style="list-style-type: none"> <li>1. Increases wind velocity</li> <li>2. Preheating of fuels during a fire</li> <li>3. Areas have more growth due to the drainage during rain seasons</li> </ol>	<p>Allow discussion</p>

# INSTRUCTOR GUIDE

FACTORS AFFECTING WILDLAND FIRES

PRESENTATION	APPLICATION
<p>B. Steep "V" drainage</p> <ol style="list-style-type: none"> <li>1. Create turbulent updrafts</li> <li>2. Chimney effect</li> <li>3. Fires spread extremely fast</li> <li>4. Very dangerous</li> </ol> <p>XX. There Are Additional Factors Which Affect The Spread Of Wildland Fires. These Are Fuel Moisture, Time Of Day, Area Ignition And Size of the fire</p> <p>XXI. Fuel Moisture</p> <p>A. Dry piece of wood exposed to moderate relative humidity (30% to 40%)</p> <ol style="list-style-type: none"> <li>1. Fuel moisture increases rapidly at first</li> <li>2. Then slows</li> <li>3. Then stops when moisture in the fuel is at equilibrium with the relative humidity</li> <li>4. If exposed for longer period of time the fuel moisture will not change</li> <li>5. For every relative humidity there is a corresponding fuel moisture content</li> </ol>	

## FACTORS AFFECTING WILDLAND FIRES

-73-

# INSTRUCTOR GUIDE

## FACTORS AFFECTING WILDLAND FIRES

PRESENTATION	APPLICATION
<p>D. Fuel moisture can be used to help control fires</p> <ol style="list-style-type: none"> <li>1. Used to find fuel moisture of surface fuels</li> <li>2. Ease of spot fires starting</li> </ol> <p>XXII. The Burning Characteristics Of Wildland Fires Can Be Predicted Based On The Time Of The Day</p> <p>A. 1000 to 1800 hours, all factors of fire intensity are at their highest</p> <ol style="list-style-type: none"> <li>1. Air is dry</li> <li>2. Fuels are dry</li> <li>3. Temperature is high</li> <li>4. Winds are strong</li> </ol> <p>B. 1800 to 0400 hours, factors favorable for fire control</p> <ol style="list-style-type: none"> <li>1. Winds usually moderate</li> <li>2. Air is cool</li> <li>3. Relative humidity usually increases</li> <li>4. Fuels absorb moisture</li> </ol> <p>C. 0400 to 0600 hours, is the time when fire can most easily be controlled</p> <ul style="list-style-type: none"> <li>• Burning remains slow until dawn</li> </ul> <p>D. After dawn fire intensity increases making fire control more difficult</p>	<p>How can the time of the day be evaluated considering wildland fire spread?</p> <p>Allow discussion</p>

# INSTRUCTOR GUIDE

FACTORS AFFECTING WILDLAND FIRES

PRESENTATION	APPLICATION
<p>E. Winds blow up-slope during the daytime and down-slope during the night</p>	<p>Which way does the wind normally blow in the mountain terrain during the day?</p>
<p>XXIII. Area Ignition Is An Advanced Stage Of Wildland Fire</p> <p>A. Direct attack and control impossible because of sudden increase in fire intensity and rate of fire spread</p> <p>B. There is little warning</p> <p>C. Crew members must know the indicators to prepare for area ignition</p> <p>D. Indicators of area ignition are:</p> <ol style="list-style-type: none"> <li>1. High, sustained rate of fire spread</li> <li>2. Well developed convection column</li> <li>3. Long distance spotting (over 600 feet)</li> <li>4. Fire whirlwinds</li> <li>5. Horizontal flame sheets</li> </ol>	<p>Allow discussion</p> <p>What are the indicators of area ignition?</p>
	<p>Do large fires react to these factors the same way that smaller fires do?</p>



# INSTRUCTOR GUIDE

FACTORS AFFECTING WILDLAND FIRES

PRESENTATION	APPLICATION
<p>XXIV. Large Wildland Fires Burn With Certain Unique Characteristics. They Still React The Same Toward Environmental Influences As Small Fires Do</p> <p>A. Strong convection currents</p> <ol style="list-style-type: none"><li>1. Crown</li><li>2. Spot ahead of the main fire</li></ol> <p>B. Size, distribution, and compactness of fuel does not affect the fire as much as the total volume of fuel</p> <p>C. Intense heat results</p> <ol style="list-style-type: none"><li>1. Large areas being consumed quickly</li><li>2. Total reduction of all combustible materials</li></ol>	<p>Allow discussion</p>

# INSTRUCTOR GUIDE

## SUMMARY

The need for every firefighter to know how the different factors will affect the spread of wildland fires is critical.

We have discussed the three main factors; Fuel, weather and topography. We have also discussed the additional factors which affect the wildland fire which include; fuel moisture, time of day, area ignition and the size of the fire. Remember, to help yourself and your crew members out of life threatening situations by keeping track of these different factors and how they are affecting the fire behavior.

## EVALUATION

1. What are some of the weather factors that influence wildland fires?  
Wind, temperature, and relative humidity
2. What % of relative humidity does fire danger become critical?  
10%
3. Which slope (aspect) of a mountain has the flasher type fuels?  
Southern slope
4. Why does fire travel faster uphill as compared to downhill?  
Flames are closer to the fuel, preheating, drying the fuel; upslope winds push the heat and flames into new fuel; convection heat rising along slope causes draft which increases the rate of spread
5. How does the location of the fuel affect the fuel moisture?  
The ground heats air at the ground level, lowering the fuel moisture
6. At what time during the day can wildland fires be usually most easily controlled?  
0400 hours to 0600 hours
7. What are some of the indicators of Area Ignition?  
High, sustained rate of fire spread; well developed convection column; long distance spotting (over 600 feet); fire whirlwinds; and horizontal flame sheets

Students will be evaluated by completing a written examination.

## ASSIGNMENT

To be determined by the instructor(s).

# INSTRUCTOR GUIDE

DEFENSIVE AND OFFENSIVE STRATEGIES  
IN WILDLAND FIREFIGHTING

---

## WILDLAND FIRE FIGHTING ESSENTIALS

### Lesson Plan # 8

**TOPIC:**                    **Defensive And Offensive Strategies In Wildland Firefighting**

**LEVEL:**                    I

**TIME:**                    30 minutes

**BEHAVIORAL OBJECTIVE:**

**Given:**                    A written examination

**Performance:**                    The student will be able to identify the differences between Offensive and Defensive Strategies as applied to Wildland Firefighting

**Standard:**                    With a minimum 70% accuracy according to Wildland Firefighting Fire Behavior, Tactics, and Command and Wildland Firefighting

**REFERENCES:**                    Wildland Firefighting Fire Behavior, Tactics, and Command, Perry, 1987, Fire Publications, Inc., Pages 195 - 211  
Wildland Firefighting, Clayton-Day-McFadden, 1987, State of California, Pages 65 -75

**MATERIALS NEEDED:**                    Appropriate audio/visual equipment and materials

**PREPARATION:**                    To safely and effectivity control a Wildland fire the Firefighter must know the different types of strategy and how to apply them to a given fire situation. Without use of strategy, the attack will be doomed to failure and the firefighter will expose themselves no needless danger.

# INSTRUCTOR GUIDE

DEFENSIVE AND OFFENSIVE STRATEGIES  
IN WILDLAND FIREFIGHTING

PRESENTATION	APPLICATION
<p>I. Before We Can Start A Discussion On Offensive vs Defensive Strategy We Need Some Definitions</p> <p>A. Strategy: The broad application of plans and actions to a problem</p> <p>B. Tactics: The details of an action required to solve a problem</p> <p>C. Offensive: Attacking a problem in an attempt to defeat it</p> <p>D. Defensive: An action to protect something or someone from impending danger</p> <p>II. Defensive Strategies Are Used For</p> <p>A. Structure Protection</p> <ol style="list-style-type: none"> <li>1. For isolated structures</li> <li>2. Communities and Subdivisions</li> <li>3. Other structures and improvements               <ol style="list-style-type: none"> <li>a) Power and Utility Lines</li> <li>b) Radio and/or Satellite Tower</li> </ol> </li> </ol> <p>B. To "turn" a fire from one direction of spread to another.</p> <ul style="list-style-type: none"> <li>• To keep fire from heavier fuel, rougher topography, sensitive wildlife areas, etc.</li> </ul> <p>C. To "slow down" a fire while waiting for additional resources</p> <ul style="list-style-type: none"> <li>• Often refers to aerial application of retardant to slow the rate of spread until ground firefighters can arrive and take action</li> </ul>	<p>What is the definition of STRATEGY?</p> <p>What is the definition of TACTICS?</p> <p>What is the definition of OFFENSIVE?</p> <p>What is the definition of DEFENSIVE?</p> <p>Under what circumstances would a defensive strategy be used?</p>

# INSTRUCTOR GUIDE

## DEFENSIVE AND OFFENSIVE STRATEGIES IN WILDLAND FIREFIGHTING

PRESENTATION	APPLICATION
<p>III. Offensive Strategies Are Used For</p> <p>A. Attacking the fire by extinguishing it</p> <ul style="list-style-type: none"><li>• Must have enough personnel and equipment on scene or available to be successful</li><li>• May be used on any size fire. Key point is that the fire is being attacked by working to put it out</li></ul> <p>B. Attacking the fire problem by constructing fire breaks so to remove the fuel</p> <ul style="list-style-type: none"><li>• May be used on any size fire. Key point is that all activity is dedicated to stopping the fire spread</li></ul>	<p>Under what circumstances would an Offensive strategy be applied?</p>

# INSTRUCTOR GUIDE

DEFENSIVE AND OFFENSIVE STRATEGIES  
IN WILDLAND FIREFIGHTING

---

## SUMMARY

In summary, strategy is a plan on how to solve a problem and tactics are the specifics on how to implement and complete a plan. An offensive strategy is used when there is enough resources available that the problem can be attacked and solved. A defensive strategy is used when, due to a variety of reasons, the whole problem can not be solved, but that some action is required to limit the extent of the problem or defend areas from the problem.

## EVALUATION

The student will be evaluated by completing a written examination.

## ASSIGNMENT

To be determined by the instructor(s).

# INSTRUCTOR GUIDE

USE OF DIRECT AND INDIRECT ATTACKS ON  
WILDLAND FIRES

## WILDLAND FIRE FIGHTING ESSENTIALS

### Lesson Plan # 9

**TOPIC:** The Use Of Direct And Indirect Attacks On Wildland Fires

**LEVEL:** I

**TIME:** 30 minutes

**BEHAVIORAL OBJECTIVE:**

**Given:** A written examination

**Performance:** The student will be able to identify the various methods of Direct and Indirect attacks on Wildland Fires

**Standard:** With a minimum 70 % accuracy according to Wildland Firefighting Fire Behavior, Tactics, and Command, and Wildland Firefighting

**REFERENCES:** Wildland Firefighting Fire Behavior, Tactics, and Command, Perry, 1987, Fire Publications, Inc., Pages 195 - 211  
Wildland Firefighting, Clayton-Day-McFadden, 1987, State of California, Pages 65 - 75

**MATERIALS NEEDED:** Appropriate audio/visual equipment and materials

**PREPARATION:** To safely and effectively attack a Wildland fire the firefighter must know how to apply the appropriate tactics to a given fire. If the wrong tactics is chosen or not everyone understands a chosen tactics the results can be disastrous. This class will give you a basic understanding of the most common tactics used in Wildland Firefighting.

# INSTRUCTOR GUIDE

USE OF DIRECT AND INDIRECT ATTACKS ON  
WILDLAND FIRES

PRESENTATION	APPLICATION
<p>I. Direct Attack</p> <p>A. The Direct Attack is used:</p> <ol style="list-style-type: none"> <li>1. On small fires</li> <li>2. In light fuels</li> <li>3. In sub-surface fuels such a peat or duff</li> <li>4. On the flanks and rear of larger fires</li> <li>5. Where burning intensities, heat, smoke, and terrain will allow</li> </ol> <p>B. Advantages of a Direct Attack</p> <ol style="list-style-type: none"> <li>1. Limits chance for fire to gain momentum or size</li> <li>2. Eliminates the need to backfire</li> <li>3. Reduces danger of fire crowning</li> <li>4. If necessary, crew can escape into burned area</li> <li>5. Takes advantage of burned out areas along the control line</li> </ol> <p>C. Disadvantages of a Direct Attack</p> <ol style="list-style-type: none"> <li>1. Personnel work in the heat and smoke</li> <li>2. More mop-up and closer patrol required</li> <li>3. More danger of slop over and spot fires</li> <li>4. Control line generally follows fire edge; is longer and irregular</li> </ol>	<p>Where would you use a direct attack on a Wildfire?</p> <p>What are some of the advantages of a Direct Attack?</p> <p>What are some of the disadvantages of a Direct Attack?</p>



# INSTRUCTOR GUIDE

USE OF DIRECT AND INDIRECT ATTACKS ON  
WILDLAND FIRES

PRESENTATION	APPLICATION
<p>5. Does not take advantage of existing fire barriers (natural or man made)</p> <p>D. Direct Attack Do's:</p> <ol style="list-style-type: none"> <li>1. Take advantage of wind lulls</li> <li>2. Time attack to coincide with fire entering lighter fuels, if possible</li> <li>3. Conserve water <ul style="list-style-type: none"> <li>• Use only as much as needed to control the fire</li> </ul> </li> <li>4. Scatter heavy fuels inside the burn</li> <li>5. Fall snags adjacent to the control line</li> </ol> <p>E. Direct Attack Don'ts:</p> <ol style="list-style-type: none"> <li>1. Attack the head on fast moving or hot fires</li> <li>2. Waste water</li> <li>3. Risk safety of personnel and equipment on fuel that will grow back next year</li> </ol>	<p>What are some of the Do's and Don'ts of a Direct Attack?</p>
<p>II. Indirect Attack</p> <p>A. Conditions when used</p> <ol style="list-style-type: none"> <li>1. Where the burning intensity, rate of spread and working conditions (heat, smoke, terrain) are too extreme</li> <li>2. Insufficient equipment and/or personnel available</li> <li>3. Good natural or man made fire barrier is available</li> </ol>	<p>Where would you use an Indirect Attack?</p>

# INSTRUCTOR GUIDE

## USE OF DIRECT AND INDIRECT ATTACKS ON WILDLAND FIRES

PRESENTATION	APPLICATION
<p>4. Fast spreading and/or hot fires</p> <p>5. To straighten fire lines (across pockets)</p> <p>B. Indirect Attack Advantages</p> <ol style="list-style-type: none"> <li>1. Personnel are not working in the heat and smoke</li> <li>2. Takes advantage of changes in fuel types</li> <li>3. Eliminates irregularity of lines</li> <li>4. Less danger of slop-over</li> <li>5. Permits taking advantage of:               <ol style="list-style-type: none"> <li>a) Tops of ridges</li> <li>b) Benches</li> <li>c) Bottom of slopes</li> <li>d) Natural barriers such as roads, trails, streams, swamps, and old burns</li> </ol> </li> </ol> <p>C. Indirect Attack Disadvantages</p> <ol style="list-style-type: none"> <li>1. Sacrifices acreage</li> <li>2. Crew may be flanked by the fire</li> <li>3. Backfire(s) may get out of control</li> <li>4. Fire may change direction suddenly</li> <li>5. Personnel must be held in readiness where fire is due to burn out by its self</li> </ol>	<p>What are the advantages to an Indirect Attack?</p> <p>What are the disadvantages of an Indirect Attack?</p> <p>What are some of Do's and Don'ts of Indirect Attack?</p>

# INSTRUCTOR GUIDE

USE OF DIRECT AND INDIRECT ATTACKS ON  
WILDLAND FIRES

PRESENTATION	APPLICATION
<p>D. Indirect Attack Do's</p> <ol style="list-style-type: none"> <li>1. Establish lines in lighter fuels, if possible</li> <li>2. Make lines as straight as possible</li> <li>3. Try to keep downed logs and dead snags on the outside of your line</li> <li>4. Make use of natural barriers</li> <li>5. Clean line down to mineral soil</li> <li>6. Maintain patrol of established lines</li> <li>7. Set backfires when needed</li> <li>8. Establish periodic rest period for crew</li> </ol> <p>E. Indirect Attack Don'ts</p> <ol style="list-style-type: none"> <li>1. Overwork crew</li> <li>2. Set unwatched backfires</li> <li>3. Construct line adjacent to tall fuels</li> <li>4. Take unnecessary chances with personnel or equipment</li> </ol>	
<p>III. Parallel Attack</p> <p>A. Conditions when used</p> <ol style="list-style-type: none"> <li>1. Primarily used by Handcrew's and Dozers</li> <li>2. Works best in relievely light fuels</li> <li>3. Works best on relievely small fires</li> <li>4. Existing natural and man-made barriers are available</li> </ol>	<p>Where would you use a Parallel Attack?</p>

## USE OF DIRECT AND INDIRECT ATTACKS ON WILDLAND FIRES

### What are the Advantages of a Parallel Attack?

### What are the Disadvantages of a Parallel Attack?

# INSTRUCTOR GUIDE

USE OF DIRECT AND INDIRECT ATTACKS ON  
WILDLAND FIRES

PRESENTATION	APPLICATION
<p>IV. Methods Of Direct Attack</p> <p>A. Flanking Action</p> <ol style="list-style-type: none"><li>1. Action is started from an anchor point</li><li>2. Usually near the Point of Origin</li><li>3. Usually attacking the hottest flank</li><li>4. May use either Engine Companies or Hand Crews (if not too hot)</li><li>5. Must make sure fire is contained before moving forward so fire does not slop-over</li></ol> <p>B. Pincer Action</p> <ol style="list-style-type: none"><li>1. Started from an anchor point</li><li>2. Usually near the Point of Origin</li><li>3. Action is on both flanks</li><li>4. Working towards the Head, pinching it off</li><li>5. Both flanks <b>do not</b> have to be attacked at the same time or extinguished at the same rate<ol style="list-style-type: none"><li>a) Engines work on hottest flank while handcrew works the cooler one</li><li>b) First in engine starts on hot flank, second in takes the other flank</li></ol></li><li>6. Must make sure fire is contained before moving forward to prevent slop-over</li></ol>	<p>What are the different methods used for executing a Direct Attack?</p> <p>SHOW OVERHEAD #1</p> <p>SHOW OVERHEAD #2</p>



# INSTRUCTOR GUIDE

USE OF DIRECT AND INDIRECT ATTACKS ON  
WILDLAND FIRES

PRESENTATION	APPLICATION
<p>C. Tandem Attack</p> <ol style="list-style-type: none"><li>1. May be used on a Flanking Action or a Pincer Attack</li><li>2. Must start at an anchor point</li><li>3. Usually near the Point of Origin</li><li>4. Usually refers to 2 engine companies working together on the same flank<ol style="list-style-type: none"><li>a) Lead engine knocks down the fire</li><li>b) Second engine makes sure the fire is out and that there is no slop-over</li></ol></li><li>5. May be used by an engine and a handcrew or dozer<ol style="list-style-type: none"><li>a) Engine knocks down the fire</li><li>b) Handcrew or dozer follows to complete a fire break</li></ol></li><li>6. Requires good communication and team work</li></ol> <p>D. Envelopment Action</p> <ol style="list-style-type: none"><li>1. Used to attack the fire from several anchor points</li><li>2. All action needs to start at nearly the same time</li><li>3. Good communication and teamwork a must</li><li>4. Can be very dangerous<ol style="list-style-type: none"><li>a) Crews may be placed with unburned fuel between them and the fire</li><li>b) Erratic fire behavior cause fire to spot or out-flank a crew</li></ol></li></ol>	<p>SHOW OVERHEAD #3</p> <p>SHOW OVERHEAD #4</p>

# INSTRUCTOR GUIDE

USE OF DIRECT AND INDIRECT ATTACKS ON  
WILDLAND FIRES

PRESENTATION	APPLICATION
<p>V. Methods Of Indirect Attack</p> <p>A. Burning Out</p> <ol style="list-style-type: none"> <li>1. Usually a Defensive action</li> <li>2. Used to strengthen a control line</li> <li>3. Used to remove pockets and/or islands of fuel</li> <li>4. Used to protect structures</li> <li>5. Must be done with tight control, good communication, and teamwork</li> <li>6. Always a risk the operation could get out of control</li> </ol> <p>B. Backfiring</p> <ol style="list-style-type: none"> <li>1. Usually an offensive action</li> <li>2. A control line is established as close as possible to the fire, taking into account the time required to construct and hold a control line and the intervening fuel is set on fire to put out the main fire</li> <li>3. May only be initiated by the I.C.</li> <li>4. Should only be done by an experienced crew</li> <li>5. Never start more fire then can be controlled by personnel assigned to the holding operation</li> <li>6. When fire danger is extreme, backfiring is very hazardous</li> </ol>	<p>SHOW OVERHEAD #5</p> <p>SHOW OVERHEAD #6</p> <p>SHOW OVERHEAD #7</p>



# INSTRUCTOR GUIDE

USE OF DIRECT AND INDIRECT ATTACKS ON  
WILDLAND FIRES

---

## SUMMARY

The use of an indirect or direct attack on a fire has many variables. The I.C. will have to weigh each of these before deciding on a specific tactic to Control the fire. You as the Firefighter must be able to take those decisions and safely and effectivity attack the fire and extinguish it.

## EVALUATION

The student will be evaluated by completing a written examination.

## ASSIGNMENT

To be determined by the instructor(s).

# INSTRUCTOR GUIDE

## STRUCTURE TRIAGE

---

### WILDLAND FIRE FIGHTING ESSENTIALS

#### Lesson Plan # 10

**TOPIC:**                      **Structure Triage**

**LEVEL:**                      II

**TIME:**                      1 hour

**BEHAVIORAL OBJECTIVE:**

**Given:**                      A written examination

**Performance:**              The student will identify concepts for selecting which structures to protect during a wildland/urban interface fire

**Standard:**                      With a minimum 70 % accuracy according to IFSTA Manual, Ground Cover Firefighting Practices and Wildland Firefighting

**REFERENCES:**              IFSTA Manual, Ground Cover Firefighting Practices, Second Edition. Fire Command 2E, Wildland Fire Tactics. Wildland Firefighting, Clayton-Day-McFadden, 1987, Published by State of California

**MATERIALS NEEDED:**      Appropriate audio/visual equipment and materials

**PREPARATION:**              Fighting ground cover fires is a very dangerous occupation. Hurried decisions can be wrong decisions when confronted by major fire destruction especially during a wildland/urban interface fire. With the upmost concern for safety of personnel and equipment , you can be confronted with making serious decisions during a fast moving fire. The following conditions will prepare firefighters and officers to understand or prevent from being placed into a wildland situation that could have less than favorable results. We'll identify the principles and concepts of identifying structures to protect and which ones to let go during a wildland/urban interface fire.

# INSTRUCTOR GUIDE

STRUCTURE TRIAGE

PRESENTATION	APPLICATION
<p>I. Choosing The Engine For The Job</p> <p>A. Equipment complement</p> <ol style="list-style-type: none"> <li>1. Hose complement           <ol style="list-style-type: none"> <li>a) single or double jacket hose</li> <li>b) amount of 1" and 1 1/2" hose                Type 3: 1000' of 1 1/2" with 800' of 1"                versus                Type 1: 1200' of 2 1/2" with 400' of 1 1/2"</li> <li>c) reel or hard lines, booster line</li> </ol> </li> <li>2. Tools - wildland versus structural</li> </ol> <p>B. Water tank capacity</p> <ol style="list-style-type: none"> <li>1. Ability to sustain an attack absent a static source</li> <li>2. Type 1: 400 gallons 500 is normal</li> <li>3. Type 2: 400 gallons 500 is normal</li> <li>4. Type 3: 300 gallons 500 is normal</li> <li>5. Type 4: 200 gallons 500 is normal</li> <li>6. Tenders: 1000+</li> <li>7. OES Engines: 750-1000 gallons</li> </ol> <p>C. Open or Closed Cab</p> <ol style="list-style-type: none"> <li>1. Open cab is very dangerous on wildland fires           <ul style="list-style-type: none"> <li>• No recorded instance where a firefighter was burned to death in a closed vehicle</li> </ul> </li> <li>2. Hose bed - is it covered and with what?                Diamond plate is best</li> </ol>	<p>Which is safer, closed or open cab engines?</p>

# INSTRUCTOR GUIDE

STRUCTURE TRIAGE

PRESENTATION	APPLICATION
<p>D. Conventional or 4-Wheel Drive - Off the Road capability</p> <ol style="list-style-type: none"> <li>1. Depending on the terrain</li> <li>2. 4-wheel drive engines may require longer travel time on the highway and may not be as readily available</li> <li>3. Most 4-wheel drive engines are Type 3 or Type 4</li> </ol> <p>E. Wheel Base</p> <ol style="list-style-type: none"> <li>1. Negotiate narrow roads</li> <li>2. Turning radius</li> </ol> <p>F. Weight</p> <ol style="list-style-type: none"> <li>1. Roadbed</li> <li>2. Bridge Capacity</li> <li>3. Septic Tanks</li> </ol> <p>G. Mechanical Condition</p> <ol style="list-style-type: none"> <li>1. Strike Teams often may end up with relief engines that are NOT first line equipment</li> <li>2. Structural type engines may not be equipped with adequate air cleaner protection</li> <li>3. Tires not adequate for off road use</li> </ol> <p>H. Pump type</p> <ol style="list-style-type: none"> <li>1. Main pump - Midship <ul style="list-style-type: none"> <li>• Disadvantage - Not mobile</li> </ul> </li> </ol>	<p>What are the basic types of pumps?</p>

# INSTRUCTOR GUIDE

STRUCTURE TRIAGE

PRESENTATION	APPLICATION
<p>2. PTO</p> <ul style="list-style-type: none"> <li>• May be capable of pumping and rolling slowly</li> </ul> <p>3. Auxiliary pump with separate power source</p> <ul style="list-style-type: none"> <li>a) Best if pump and roll is what you need for "HIT AND RUN"</li> <li>b) Water curtain can be provided for safety even when engine is moving</li> </ul> <p>I. Personnel on the engine</p> <ul style="list-style-type: none"> <li>1. Order what you need</li> <li>2. Experience may determine capability of an individual engine</li> <li>3. Fatigue becomes a critical factor</li> </ul> <p>J. Remember that when things are tough and homes are burning, what you may need is just the closest engines of any type right away</p> <p>II. Type Of Assignment For An Engine Or Strike Team Will Help You Determine The Best Suited Engine For The Job</p> <p>A. Mobile attack on grass fires</p> <ul style="list-style-type: none"> <li>1. Ability to pump and roll</li> <li>2. Shorter wheel base generally better</li> </ul> <p>B. Stationary pumping on hose lay</p> <ul style="list-style-type: none"> <li>1. Length of the hoselay may indicate the need for larger water tank</li> <li>2. Hose lay elevation may require a pump for 450 # pressure</li> </ul>	

# INSTRUCTOR GUIDE

## STRUCTURE TRIAGE

PRESENTATION	APPLICATION
<p>C. Primarily Off-Road pumping</p> <ol style="list-style-type: none"> <li>1. Generally best to use brush engines</li> <li>2. Avoid damage to larger more expensive engines</li> </ol> <p>D. Structure protection</p> <ol style="list-style-type: none"> <li>1. Water tank capacity is important - Larger the Better <ul style="list-style-type: none"> <li>• A Strike Team of OES engines 750-1000 gallons</li> </ul> </li> <li>2. Depending on terrain smaller and shorter wheel base engines may be better</li> </ol> <p>III. Fire Engine And Strike Team Tactics On Wildland Fires</p> <p>A. Strike Teams</p> <ol style="list-style-type: none"> <li>1. Up to 5 Strike Teams per Division, 5 Divisions per Branch</li> <li>2. Strike Team components <ol style="list-style-type: none"> <li>a) Common capability</li> <li>b) Common communications</li> <li>c) Common leader</li> </ol> </li> <li>3. Although 3 Kinds, we'll focus on engines <ol style="list-style-type: none"> <li>a) Typical type first</li> <li>b) Remember, you can also use mixed Task Forces</li> </ol> </li> </ol>	<p>How many gallons of water are on most OES strike team engines?</p>

## STRUCTURE TRIAGE

-97-

# INSTRUCTOR GUIDE

## STRUCTURE TRIAGE

PRESENTATION	APPLICATION
<ul style="list-style-type: none"> <li>b) Don't park under power lines. Keep engines working as a Team. Exercise tight control                             <ul style="list-style-type: none"> <li>• Don't spread out too far. Visual contact is best</li> </ul> </li> <li>c) Strike Team Leader should survey area to check for special conditions or hazards</li> <li>d) Don't have engines lay long hoselays. Hoselays will cut mobility and may burn up a lot of hose</li> </ul> <p>2. Assure that all personnel are in full protective equipment, all water tanks are full, all engines have adequate fuel, and that all radios work</p> <p>D. Use of Water - Plan and discuss its use ahead of time</p> <p>1. Water Conservation - with hydrant supply</p> <ul style="list-style-type: none"> <li>a) Consider effect on heavy water consumption</li> <li>b) What about the adjacent water main</li> <li>c) Don't wet down ahead of the fire, extinguish only what is absolutely necessary                             <ul style="list-style-type: none"> <li>• Don't waste water on wood shingle roofs - they dry too fast</li> </ul> </li> </ul>	<p>Should firefighters wet down roofs?</p>



# INSTRUCTOR GUIDE

## STRUCTURE TRIAGE

PRESENTATION	APPLICATION
<ul style="list-style-type: none"> <li>d) Remove strategic combustibles which require more water use                             <ul style="list-style-type: none"> <li>1) Move garden furniture</li> <li>2) Cut the cypress down</li> <li>3) Cut and remove brush along the hillside road where stand is to be made - while waiting for the fire</li> </ul> </li> <li>e) Let everything burn that is not vital to fire control</li> <li>f) Don't lay a line, just because there is a lot of fire and a hydrant</li> <li>g) If lines are left at a fast moving fire, take the fittings with your apparatus if possible</li> </ul> <p>2. Water Conservation - with tank supply</p> <ul style="list-style-type: none"> <li>a) Conserve limited supplies, use hand tools</li> <li>b) Always know what your level is</li> <li>c) Never go below 100 gallons or 60 seconds worth of water</li> </ul> <p>3. Water Tender use</p> <ul style="list-style-type: none"> <li>a) Order sufficient Water Tenders to keep Strike Teams adequately supplied                             <ul style="list-style-type: none"> <li>1) Depending on travel time and distance, 1 or 2 Water Tenders can keep a Strike Team supplied</li> <li>2) Water conservation must be enforced even when working with Water Tenders</li> </ul> </li> </ul>	<p>How much water should firefighters save for personal safety?</p>

# INSTRUCTOR GUIDE

## STRUCTURE TRIAGE

PRESENTATION	APPLICATION
<p>E. Protecting structures and motor vehicles (ahead of the fire)</p> <ol style="list-style-type: none"> <li>1. Close windows - garage doors</li> <li>2. Leave lights on so house can be seen at night</li> <li>3. Put combustible garden furniture in garage or house</li> <li>4. Move wood piles away from the structures</li> <li>5. Move combustible fences away from the structures</li> <li>6. Move lace-type curtains from windows on exposed side. Heavy drapes may be advantageous</li> <li>7. Chop down highly combustible shrubbery and place where it will not expose a structure</li> <li>8. Remove any combustibles from vicinity of LPG Tanks</li> <li>9. Shut off gas</li> <li>10. Have civilians place step ladders, etc. on front porch, or where readily visible</li> <li>11. Place fire department extension ladders at houses you will later try to save by working on the roof</li> <li>12. Hook up available garden hoses - test for water pressure</li> <li>13. Remove leaves from the roofs and gutters</li> <li>14. Call for truck companies where or if practical</li> </ol>	<p>Should curtains be removed or left alone in the structures?</p>

# INSTRUCTOR GUIDE

## STRUCTURE TRIAGE

PRESENTATION	APPLICATION
<p>15. Civilian motor vehicles</p> <ul style="list-style-type: none"> <li>a) Put in garage - preferably heading out, not in</li> <li>b) Close all windows - no matter where vehicles are located</li> <li>c) Park where least exposed - but, not in driveway where fire apparatus might operate or hose lines be laid <ul style="list-style-type: none"> <li>• Not in a narrow street, front lawn would be better if practical</li> </ul> </li> </ul> <p>F. Protecting structures (when fire hits)</p> <ol style="list-style-type: none"> <li>1. A structure seldom will burst into flames; it usually will start as a small fire in one or more spots <ul style="list-style-type: none"> <li>a) Blowing sparks trapped under shingle or shake roofs</li> <li>b) Heat or flames trapped beneath the eaves of the roof</li> <li>c) Burning debris blown through ground vents or attic vents</li> <li>d) Windows broken from heat and drafts</li> <li>e) Doors or windows left open</li> </ul> </li> </ol>	<p>What structure elements are attacked when the fire hits?</p>

# INSTRUCTOR GUIDE

## STRUCTURE TRIAGE

PRESENTATION	APPLICATION
<ul style="list-style-type: none"> <li>f) Exposures from burning (remove if possible and desirable)                             <ul style="list-style-type: none"> <li>1) Shrubbery, trees</li> <li>2) Combustible garden furniture</li> <li>3) Fences</li> <li>4) Wood piles</li> <li>5) Automobiles</li> <li>6) Adjacent structures</li> <li>7) Combustible rubbish</li> </ul> </li> <li>2. Survey ahead of the fire and give priority of protection</li> <li>3. Common errors                             <ul style="list-style-type: none"> <li>a) Laying hose lines too far, too much hose and tiring out the firefighters</li> <li>b) Meet the fire where an easier stand can be made</li> <li>c) Not maintaining sight or radio contact with engines in the Strike Team</li> <li>d) Wasting time and energy on structures that will be lost no matter what your effort is</li> <li>e) Employing unnecessary apparatus, where less will do. Clogging roadways</li> <li>f) Parking equipment where it is unnecessarily exposed to direct fire</li> </ul> </li> </ul>	<p>What are some common errors during Strike Team operations protecting structures?</p>

# INSTRUCTOR GUIDE

## STRUCTURE TRIAGE

PRESENTATION	APPLICATION
<ul style="list-style-type: none"> <li>g) Laying unnecessary line</li> <li>h) Wetting down shingle roofs and adjoining areas when insufficient water is available</li> <li>i) Don't use hardlines</li> </ul> <p>G. Safety</p> <ol style="list-style-type: none"> <li>1. If fire is too hot, retreat into the structure, closed engine cab, or even swimming pool temporarily, when fire passes, extinguish burning exterior or exit the engine</li> <li>2. Without a specific purpose, don't face an intense fire</li> <li>3. Keep apparatus mobile               <ul style="list-style-type: none"> <li>a) Move from structure to structure with the fire</li> <li>b) You may have firefighters in difficult situations</li> <li>c) If the civilian owner is present, point out possible places of DANGEROUS flare-ups before you leave</li> <li>d) Park behind a structure, heading out of the driveway</li> </ul> </li> <li>4. Engine Safety               <ul style="list-style-type: none"> <li>a) Headlights on at all times (spotlight can be turned upward at night for visibility)</li> <li>b) Windows closed</li> <li>c) Coiled pre-connected charged 100' of 1 1/2" or 1 3/4" hose</li> </ul> </li> </ol>	<p>Where can firefighters seek refuge during a major flare-up while protecting structures?</p>

# INSTRUCTOR GUIDE

## STRUCTURE TRIAGE

PRESENTATION	APPLICATION
<ol style="list-style-type: none"> <li>5. Park on the roadway adjacent to the structures, always choose between heading with direction of fire travel or heading towards a possible escape route</li> <li>6. When protecting structures and also making a stand along a road, detail firefighters to prevent fire from spotting across</li> <li>7. Fire out around structures where possible but only after advising your supervisor of your intention. Check for agency restrictions</li> <li>8. Stay out of topographic saddles and chutes</li> </ol>	<p>What about firing out for protection?</p>
<p>IV. What To Tell Civilians About The Dangers</p> <ol style="list-style-type: none"> <li>1. Remind them that even fire department activities can be dangerous to them</li> <li>2. Ideally, evacuation is primarily a police problem - leaving the fire department free to operate</li> <li>3. Encourage civilians to leave the fire area on foot or in vehicles if practical</li> <li>4. Inform them of the danger of running up hills, canyons or draws ahead of a moving fire</li> <li>5. Explain a person is safe in a well built structure when a fire sweeps past</li> <li>6. If civilians are determined to stay with their homes, explain basic protection concepts</li> <li>7. Try to impress family concept</li> </ol>	<p>What are some items firefighters can advise civilians insisting to remain with their homes?</p>

# INSTRUCTOR GUIDE

## STRUCTURE TRIAGE

PRESENTATION	APPLICATION
<p>V. Structure Protection Triage</p> <p>A. The most difficult decisions on a wildland fire, which homes to try and save and which ones to write off.</p> <ol style="list-style-type: none"> <li>1. General factors               <ol style="list-style-type: none"> <li>a) Clearance</li> <li>b) Fuel type</li> <li>c) Terrain</li> <li>d) Access</li> <li>e) Roof construction</li> </ol> </li> <li>2. Some guidelines for structure protection are               <ol style="list-style-type: none"> <li>a) If its well involved and others are not, go for the ones that are not</li> <li>b) Look at the type of roof coverings</li> </ol> </li> <li>3. Consider personnel safety</li> <li>4. Consider available personnel</li> <li>5. Consider water supply</li> <li>6. Consider values at stake including human life</li> <li>7. Sometimes everything you try won't be enough, and</li> <li>8. At other times the rewards and thanks will be great</li> </ol>	<p>What are the basic five factors to consider during structure size-up?</p>

## SUMMARY

Fighting ground cover fires is a very dangerous occupation. Hurried decisions can be wrong decisions when confronted by major fire destruction especially during a wildland/urban interface fire.

With the utmost concern for safety of personnel and equipment , you can be confronted with making serious decisions during a fast moving fire. The principles and concepts of identifying structures to protect and which ones to let go during a wildland/urban interface fire will confront firefighters with seconds to spare. Be prepared to make a sound decision that you will feel comfortable with. Utmost of all, do it SAFELY.

## EVALUATION

Students will be evaluated by completing a written examination.

## ASSIGNMENT

To be determined by the instructor(s).



## STRUCTURE TRIAGE FIRE ENGINE CAPABILITIES AND TACTICS

### I. CHOOSING THE ENGINE FOR THE JOB

#### A. Equipment Complement

##### 1. Hose Complement

- a) single or double jacket hose
- b) amount of 1" and 1 1/2" hose
  - 1) Type 3: 1000' of 1 1/2" with 800' of 1" versus
  - 2) Type 1: 1200' of 2 1/2" with 400' of 1 1/2"
- c) reel or hard lines, booster line

##### 2. Tools - Wildland versus Structural

#### B. Water Tank Capacity

- 1. Ability to sustain an attack absent a static source.
- 2. Type 1: 400 gallons                      500 is Normal
- 3. Type 2: 400 gallons                      500 is Normal
- 4. Type 3: 300 gallons                      500 is Normal
- 5. Type 4: 200 gallons                      500 is Normal
- 6. Tenders: 1000+

#### C. Open or Closed Cab

- 1. Open cab is very dangerous on wildland fires. There has never been a recorded instance where a firefighter was burned to death in a closed vehicle, but numerous firefighters are burned out in the open, on the back of an engine, or attempting to outrun the fire.
- 2. Hose bed - is it covered and with what?  
Diamond plate is best.

#### D. Conventional or 4-Wheel Drive - Off the Road Capability

- 1. Depending on the terrain a 4-wheel drive may be required if traction, climbing ability, or ground clearance are important.
- 2. Remember - 4-wheel drive engines may require longer travel time on the highway and may not be as readily available.
- 3. Most 4-wheel drive engines are Type 3 or Type 4.

## E. Wheel Base

1. Ability to negotiate narrow roads with short radius or steep climbing turns.
2. Turning radius short enough to change directions rapidly when needed.

## F. Weight

1. Roadbed
2. Bridge Capacity
3. Septic Tanks

## G. Mechanical Condition

1. Strike Teams often may end up with relief engines that are NOT First Line equipment.
2. Structural Type Engines may not be equipped with adequate air cleaner protection.
  - a) Flying embers in paper elements - motor quits
3. Tires not adequate for off road use.

## H. Pump Type

1. Main Pump - Midship
  - a) Disadvantage - Not mobile
2. PTO
  - a) May be capable of pumping and rolling slowly
3. Auxiliary Pump with separate power source
  - a) Best if pump and roll is what you need for "HIT AND RUN"
  - b) Water curtain can be provided for safety even when engine is moving.

## I. Personnel on the Engine

1. You can't expect a 3-person crew to put a progressive hoselay in as fast as a 4 or 5 person crew. Order what you need.
2. Experience of the company officer crew members determine what the capability of an individual engine is.

3. Fatigue becomes a critical factor.

J. Remember that when things are tough and homes are burning, what you may need is just the closest engines of any type right away.

## **II. TYPE OF ASSIGNMENT FOR AN ENGINE OR STRIKE TEAM WILL HELP YOU DETERMINE THE BEST SUITED ENGINE FOR THE JOB.**

### **A. Mobile Attack on Grass Fires**

1. Ability to pump and roll
2. Shorter wheel base generally better
  - a) better approach angles
  - b) better ground clearance

### **B. Stationary Pumping on Hose Lay**

1. Length of the hoselay may indicate the need for larger water tank if supply is being transported to the scene.
2. Hose lay elevation may require a pump that will pump 450 # pressure.

### **C. Primarily Off-Road Pumping**

1. Generally best to use brush engines
2. Avoid damage to larger more expensive engines

### **D. Structure Protection**

1. Water Tank Capacity is important - Larger the Better
  - a) A Strike Team of OES Engines for example can sustain themselves longer without replenishing their water because most carry 750-1000 gallons.
2. Depending on terrain and the area you're working, smaller and shorter wheel base engines may be better due to narrow winding roads and short steep driveways.

## III. FIRE ENGINE AND STRIKE TEAM TACTICS ON WILDLAND FIRES

### A. Strike Teams

1. Up to 5 Strike Teams per Division, 5 Divisions per Branch
2. Strike Team Components
  - a) Common Capability
  - b) Common Communications
  - c) Common Leader
3. Although 3 Kinds, We'll focus on Engines.
  - a) Typical Type First
  - b) Remember, you can also use mixed Task Forces

### B. Strike Teams may be Dispatched to Staging Areas or Directly to the Fire

1. If you report to Staging Area, the Strike Team Leader must Check-In with the Staging Area Manager. Remember:
  - a) Responding directly to the Incident, Check-In with the Division Supervisor.
  - b) Responding to the Staging Area, Check-In with the Staging Area Manager.
  - c) A staged Strike Team is under the direct supervision of the Operations Chief.
  - d) A staged Strike Team is considered an available resource and must be able to respond within 3 minutes. This means no wandering around in the Staging Area. Keep the Teams parked together.
2. The Strike Team Leader must report his arrival either by radio or in person to obtain his assignment.

## C. Deployment of Equipment

1. When assigned to a fire engine deployment is critical. Get a clear assignment from your Supervisor.
  - a) Always have an escape route.
    - 1) Back engines in.
    - 2) Use buildings or natural barriers for protection.
    - 3) Don't park at top of draws or natural funnels.
  - b) Don't park under power lines. Keep engines working as a Team. Exercise tight control.
    - 1) Don't spread out too far. Visual contact is best.
  - c) Strike Team Leader should survey area to check for special conditions or hazards.
  - d) Unless absolutely necessary Don't have engines lay long hoselays. Hoselays will cut mobility and may burn up a lot of hose.
2. Before deploying, assure that all personnel are in full protective equipment, all water tanks are full, all engines have adequate fuel, and that all radios work.

## D. Use of Water - Plan and Discuss its Use Ahead of Time

1. Water Conservation - With Hydrant Supply
  - a) Consider effect on heavy water consumption on other lines tapped off the main line laid.
  - b) What about the adjacent water main? Other companies working out of your vision? Residents or firefighters working off the garden hose?
  - c) When water conservation is important, Don't wet down ahead of the fire, extinguish only what is absolutely necessary.
    - 1) Don't waste water on wood shingle roofs - they dry to fast.
  - d) Remove strategic combustibles which require more water use.
    - 1) Move garden furniture
    - 2) Cut the cypress down
    - 3) Cut and remove brush along the hillside road where stand is to be made - while waiting for the fire.

- e) Let everything burn that is not vital to fire control or not an exposure hazard to the objects of value.
- f) Don't lay a line, just because there is a lot of fire and a hydrant. Have a compelling reason.
- g) If lines are left at a fast moving fire, take the fittings with your apparatus if possible.

### 2. Water Conservation - With Tank Supply

- a) Conserve limited supplies, use hand tools in conjunction with a hose line when working on brush.
- b) Always know what your level is.
- c) Never go below 100 gallons or 60 seconds worth of water.

### 3. Water Tender Use

Where water supply is a problem, Strike Team Leaders, Division Supervisors or Operations Chiefs should order sufficient Water Tenders to keep Strike Teams adequately supplied.

- a) Depending on travel time and distance, 1 or 2 Water Tenders can keep a Strike Team supplied.
- b) Water conservation must be enforced even when working with Water Tenders.

## E. Protecting Structures and Motor Vehicles (Ahead of the Fire)

- 1. Close windows - garage doors.
- 2. Leave lights on so house can be seen at night.
- 3. Put combustible garden furniture in garage or house, in any event place the furniture so that it will not expose a structure.
- 4. Move wood piles away from the structures.
- 5. Move combustible fences away from the structures.
- 6. Ask residents to move lace-type curtains from windows on exposed side. Heavy drapes may be advantageous.
- 7. Chop down highly combustible shrubbery and place where it will not expose a structure.

8. Remove any combustibles from vicinity of LPG Tanks.
9. Shut off Gas.
10. Have civilians place step ladders, etc. on front porch, or where readily visible.
11. Place fire department extension ladders at houses you will later try to save by working on the roof.
12. Hook up available garden hoses - test for water pressure.
13. Remove leaves from the roofs and gutters.
14. Call for truck companies where or if practical.
15. Civilian Motor Vehicles
  - a) Put in Garage - Preferably heading out, not in.
  - b) Close all windows - no matter where vehicles are located.
  - c) Park where least exposed - But, not in driveway where fire apparatus might operate or hose lines be laid.
    - 1) Not in a narrow street, front lawn would be better if practical.

## F. Protecting Structures (When Fire Hits)

1. A structure seldom will burst into flames; it usually will start as a small fire in one or more spots.
  - a) Blowing sparks trapped under shingle or shake roofs.
  - b) Heat or flames trapped beneath the eaves of the roof.
  - c) Burning debris blown through ground vents or attic vents.
  - d) Windows broken from heat and drafts.
  - e) Doors or windows left open.

f) Exposures from burning (remove if possible and desirable).

- 1) Shrubbery, trees
- 2) Combustible garden furniture
- 3) Fences
- 4) Wood piles
- 5) Automobiles
- 6) Adjacent structures
- 7) Combustible rubbish

2. Survey ahead of the fire and give priority of protection considering construction and topographical factors, equipment and personnel to be utilized and fire spread.

### 3. Common Errors

- a) Laying hose lines too far away from the structure using too much hose and tiring out the firefighters.
- b) Meet the fire where an easier stand can be made.
- c) Not maintaining sight or radio contact with engines in the Strike Team.
- d) Wasting time and energy on structures that will be lost no matter what your effort is.
- e) Employing unnecessary apparatus, where less will do. Clogging roadways.
- f) Parking equipment where it is unnecessarily exposed to direct fire.
- g) Laying Unnecessary Line.
- h) Wetting down shingle roofs and adjoining areas when insufficient water is available.
- i) Don't use hardlines.

## G. **SAFETY**

1. If fire is too hot, retreat into the structure, closed engine cab, or even swimming pool temporarily, when fire passes, extinguish burning exterior or exit the engine.
2. Without a specific purpose, don't face an intense fire, retreat to protection (behind fence, ledge, house) and go to work at a more favorable moment.



3. Keep Apparatus Mobile - at a fast moving fire, your operations may dictate that personnel position their apparatus in key positions for withdrawal. Run not in fear but because it is the best decision.
  - a) Move from structure to structure with the fire.
  - b) You may have a firefighter at difficult situations.
  - c) If the civilian owner is present, point out possible places of DANGEROUS flare-ups before you leave.
  - d) Park Behind a Structure, Heading Out of the Driveway.
4. Engine Safety
  - a) Headlights on at all times (spotlight can be turned upward at night for visibility).
  - b) Windows Closed.
  - c) Coiled pre-connected charged 100' of 1 1/2" or 1 3/4" hose.
5. Park on the roadway adjacent to the structures, always choose between heading with direction of fire travel or heading towards a possible escape route.
6. When protecting structures and also making a stand along a road, detail firefighters to prevent fire from spotting across.
7. Fire out around structures where possible but only after advising your supervisor of your intention.
8. Stay Out of Topographic Saddles and Chutes.

## IV. WHAT TO TELL CIVILIANS ABOUT THE DANGERS

1. Remind them that even fire department activities can be dangerous to them.
2. Ideally, evacuation is primarily a police problem - leaving the fire department free to operate.
3. Encourage civilians, especially elderly or ambulatory individuals to leave the fire area on foot or in vehicles if practical.

4. Inform them of the danger of running up hills, canyons or draws ahead of a moving fire.
5. Explain that in almost all instances, a person is safe in a well built structure when a fire sweeps past, even though it may eventually be destroyed.
6. If civilians are determined to stay with their homes, explain the value of removing any exposures (furniture, shrubs, wood piles, etc.), and how to protect themselves and handle a garden hose.
7. Try to impress the mother or father with the importance of keeping the family together, this reasoning sometimes assists the evacuation effort.

### V. STRUCTURE PROTECTION TRIAGE

- A. Company Officers, Strike Team Leaders, Division Supervisors, and Operations Chiefs must be capable of making one of the most difficult decisions on a wildland fire, which homes to try and save and which ones to write off.

General Factors:

1. Clearance
2. Fuel Type
3. Terrain
4. Access
5. Roof Construction

Some Guidelines for Structure Protection are:

1. If its well involved and others are not, go for the ones that are not.
2. Look at the type of roof coverings, wood over hangs, and proximity to brush. In an intense fire shake shingle roofs and wood sided houses are very difficult to save.
3. Consider personnel safety.
4. Consider available personnel.
5. Consider water supply.
6. Consider values at stake including human life.
7. Sometimes everything you try won't be enough, and
8. At other times the rewards and thanks will be great.

# INSTRUCTOR GUIDE

USING STRUCTURES AND VEHICLES FOR  
REFUGE IN WILDLAND FIRES

---

## WILDLAND FIRE FIGHTING ESSENTIALS

### Lesson Plan # 11

**TOPIC:** Using Structures and Vehicles for Refuge in Wildland Fires

**LEVEL:** I

**TIME:** 30 minutes

**BEHAVIORAL OBJECTIVE:**

**Given:** A written exam.

**Performance:** The student will be able to identify the procedures for using structures and vehicles as a place of refuge in a wildland fire.

**Standard:** With 70% accuracy.

**REFERENCES:** C.F.S.T.E.S., Command 2E, State Fire Marshal's Office.

**MATERIALS NEEDED:** White porcelain board, dry markers, pointer. Overhead projector and screen. Student handouts, one per student. Written exam and writing implement, one per student. Transparencies.

**PREPARATION:** Your Strike Team has been assigned to structure protection in a Cul-De-Sac on a ridge line. You are told the fire probably will not run in that direction but this is an affluent area and the I.C. wants a show of force there. Your Engine Company is assigned to protect the 3 houses at the end of the Cul-De-Sac. Based on the information you were given your company has taken no precautions around any of the houses. Suddenly there is a major blow-up in the fires behavior. It has started spotting far in front of the main fire. In fact, as you look down the street, you see many spot fires have started and your only way out has been cut off. You also see that many spot fires have started on the hill below the houses and they are converging and are ready to make a run up the hill towards your position. How will you and your company survive the next few minutes? This class will give you that answer.

## USING STRUCTURES AND VEHICLES FOR REFUGE IN WILDLAND FIRES

-119-

# INSTRUCTOR GUIDE

USING STRUCTURES AND VEHICLES FOR  
REFUGE IN WILDLAND FIRES

PRESENTATION	APPLICATION
<ul style="list-style-type: none"> <li>6. Remove light curtains from the windows, if they have heavy drapes, close them</li> <li>7. Remove combustible vegetation close to structure</li> <li>8. Remove combustibles from LPG tank</li> <li>9. Shut off gas</li> <li>10. Bring in the following:               <ul style="list-style-type: none"> <li>a) Hose line, extinguishers, back pumps, etc.</li> <li>b) S.C.B.A.'s</li> <li>c) Personal protective clothing</li> </ul> </li> <li>B. If fire is imminent               <ul style="list-style-type: none"> <li>1. Advise Strike Team Leader, Division/Group Supervisor, or Incident Commander of the situation</li> <li>2. Close windows</li> <li>3. Close heavy drapes, if available</li> <li>4. Wear personal protective clothing</li> <li>5. Bring in the following:                   <ul style="list-style-type: none"> <li>a) Hose line, extinguishers, back pumps, etc.</li> <li>b) S.C.B.A.'s</li> </ul> </li> </ul> </li> <li>C. When fire hits               <ul style="list-style-type: none"> <li>1. Structures seldom "burst into flames", usually start as small fires in one or more spots from:                   <ul style="list-style-type: none"> <li>a) Blowing sparks trapped under shingles</li> <li>b) Heat and/or flames trapped beneath the eaves of the roof</li> </ul> </li> </ul> </li> </ul>	

# INSTRUCTOR GUIDE

USING STRUCTURES AND VEHICLES FOR  
REFUGE IN WILDLAND FIRES

PRESENTATION	APPLICATION
<ul style="list-style-type: none"> <li>c) Embers blown through ground or attic vents</li> <li>d) Windows broken from heat and draft</li> <li>e) Doors or windows left open</li> </ul> <ol style="list-style-type: none"> <li>2. Keep crew calm</li> <li>3. Continue to check structure for interior fires</li> <li>4. Put out small interior fires with hose line, extinguisher, or backpump</li> <li>5. Wait for fire to pass before trying to put out any fire on the exterior of the structure</li> </ol> <p>D. After fire passes</p> <ol style="list-style-type: none"> <li>1. Head count</li> <li>2. Check crew for injuries</li> <li>3. Move outside and check apparatus               <ul style="list-style-type: none"> <li>• attempt to extinguish, if possible</li> </ul> </li> <li>4. Attempt to extinguish structure, if possible               <ul style="list-style-type: none"> <li>• Base on structure triage protocols</li> </ul> </li> <li>5. If apparatus is operable and crew is capable, move on to next assignment</li> </ol>	
<p>III. Using a vehicle for refuge</p> <p>A. Before responding to a fire</p> <ol style="list-style-type: none"> <li>1. Checking door and window seals for tightness</li> <li>2. Cover holes in floor boards, if possible</li> </ol>	<p>When should you be prepared to use your vehicle as a place of refuge?</p>

# INSTRUCTOR GUIDE

USING STRUCTURES AND VEHICLES FOR  
REFUGE IN WILDLAND FIRES

PRESENTATION	APPLICATION
<ul style="list-style-type: none"> <li>3. Practice getting the crew in the cab, while wearing personal protective equipment</li> <li>4. Check conditions of fire blankets/drapes, if so equipped</li> <li>B. When fire is imminent                             <ul style="list-style-type: none"> <li>1. Call for help</li> <li>2. Park apparatus                                     <ul style="list-style-type: none"> <li>a) In area away from fuel</li> <li>b) Fire out around apparatus, if there is time</li> <li>c) Stay out of saddles and draws</li> <li>d) Set parking brake</li> <li>e) Behind a structure</li> <li>f) Not under power lines</li> <li>g) Point in direction of escape</li> </ul> </li> </ul> </li> <li>C. When fire hits                             <ul style="list-style-type: none"> <li>1. Roll up windows, shut doors, and lower blankets/drapes</li> <li>2. Cover windows with fire shelters</li> <li>3. Stay as low as possible</li> <li>4. Cover up with turnouts, if possible</li> <li>5. Keep engine running, with RPM's up</li> <li>6. Keep calm</li> <li>7. Take shallow breaths</li> <li>8. Use SCBA's, if possible</li> </ul> </li> </ul>	



# INSTRUCTOR GUIDE

USING STRUCTURES AND VEHICLES FOR  
REFUGE IN WILDLAND FIRES

PRESENTATION	APPLICATION
<p>D. What to expect</p> <ol style="list-style-type: none"><li>1. Temperatures will reach 200 degrees F</li><li>2. Plastic parts will start to melt and may give off fire gases</li><li>3. Exposed skin will get burns from radiant heat</li><li>4. If the vehicle catches fire and you have to exit before the fire passes<ol style="list-style-type: none"><li>a) Deploy shelters in the cab</li><li>b) Step out</li><li>c) Wrap the shelter around you</li><li>d) Stay as low as possible</li><li>e) Move away from vehicle</li><li>f) Deploy shelter in a safe area</li></ol></li></ol> <p>E. After fire passes</p> <ol style="list-style-type: none"><li>1. Check for injuries and treat</li><li>2. Exit cab with fire shelter</li><li>3. Put out apparatus, if possible</li><li>4. Be cautious of fire coming back through</li><li>5. If apparatus can not be saved, start for another safe area</li></ol>	

# INSTRUCTOR GUIDE

USING STRUCTURES AND VEHICLES FOR  
REFUGE IN WILDLAND FIRES

---

## SUMMARY

This lesson plan has given you the information you need to survive being over run by a wildland fire. If you obey the "Standard Firefighting Orders" and "Situations that shout Watch Out", you will probably never need to use this information. But, if you find yourself in a bad situation, this information will save your life. Remember, if possible escape the fire, if you can not, take refuge in a structure, as first choice, a vehicle as second choice, and a fire shelter as the last alternative.

## EVALUATION:

The student will be evaluated by completing a written examination.

## ASSIGNMENT:

Be prepared for a written quiz on \_\_\_\_\_ (DATE).

## YOU'RE IN YOUR CAR AND SURROUNDED BY FLAMES: DON'T PANIC!

By N. P. Cheney  
(Excerpt from Fire Management)

(N. P. Cheney is with the Forestry and Timber Bureau, Department of National Development, Canberra, Australia)

A number of popular misconceptions, such as death from lack of oxygen if you are trapped in a fire or that a car gas tank will explode if exposed to naked flame, cause many persons to panic and sometimes flee a safe refuge. This does not have to be.

Over several years, studies in and around Canberra by officers of the Forestry and Timber Bureau have produced information to aid human survival in brush fires. This article is based on their findings.

### CAR SHIELD

To study the performance of a car as a shield against radiation, cars were subjected to intense radiant heat from windrows and burning pine slash.

The car windows cut down the radiation inside to around half of that received outside at the peak of the fire but a person inside would have suffered severe burns to any bare skin.

Although air temperature inside the car did not rise to hazardous level, smoke from smoldering plastic and rubber materials used in interior linings caused severe discomfort. However, as already mentioned, the period of intense heat in the tests exceed that which would be experienced in most forest situations and was far greater than would ever be experienced in grass fires.

Furthermore, research has shown that the standard gas tank is quite difficult to explode. When a tank contains gas the space above the liquid contains a mixture that is too rich in gas vapor for an explosion to occur.

### RADIANT HEAT KILLS

In grass or forest fires, the main cause of death is heat stroke in an extreme form as a result of excessive radiation. Even severe burns to the body are not an immediate cause of death unless accompanied by heat stroke.

Most of the heat felt from a brush fire is radiant heat, and though it can reach high intensity it lasts only a relatively short time.

Radiant heat, like light, travels in straight lines; does not penetrate solid substances; and is easily reflected, physical principles basic to survival procedures.

# STUDENT INFO

## VEHICLE AS A REFUGE

---

Even in severe fires the temperature near the ground remains cool as hot combustion gases are rapidly carried away by convection. Measurements have shown that air temperatures within a few feet of the ground and within a few feet of flames up to 35 feet high are less than 120° Fahrenheit. While air at this temperature may be unpleasant it can be breathed. Bush fires in the open do not deplete the oxygen concentration in the air outside the actual zone where combustion is taking place.

### BE CAREFUL

In spite of warnings and precautions, situations will probably continue to develop in which fires threaten houses and trap car travelers. The Forestry and timber Bureau offers the following advise:

Do not drive a motor vehicle blindly through heavy smoke. Switch on headlights and park adjacent to bare areas beside the road as far away as possible from the leading edge of the fire, or park where roadside grass is shortest.

Wind up all windows and shelter yourself from radiation beneath the dashboard with a rug or some other article (such as a floor mat) covering your body. Remain calm and have confidence that the gas tank will not explode, and that even in the worst situations, it will be some minutes before the vehicle catches fire. If the vehicle does catch fire you can leave it but keep your skin covered as much as possible.

Remain calm and do not run blindly from the fire. If you become exhausted you are much more prone to heat stroke and you can easily overlook a safe refuge. consider an alternative course of action.

Behind all these instructions are three basic principles which must be remembered at all times:

Select an area where there is the least amount of combustible material.

Use every means to protect yourself from radiation from the flames.

Remain calm and don't panic.

# INSTRUCTOR GUIDE

WILDLAND FIRE SAFETY

---

## WILDLAND FIRE FIGHTING ESSENTIALS

### Lesson Plan # 12

**TOPIC:** Wildland Fire Safety

**LEVEL:** II

**TIME:** 1 hour

**BEHAVIORAL OBJECTIVE:**

Given: A written examination

Performance: The student will identify safety aspects needed to prevent from being overrun by wildland fires

Standard: With a minimum 70 % accuracy according to IFSTA Manual, Ground Cover Firefighting Practices, and Wildland Firefighting

**REFERENCES:** IFSTA Manual, Ground Cover Firefighting Practices, Second Edition, Pages 111-127  
Fire Command 2E, Wildland Fire Tactics  
Wildland Firefighting, Clayton-Day-McFadden, 1987, Published by State of California, Pages 109-123

**MATERIALS NEEDED:** Appropriate audio/visual equipment and materials

**PREPARATION:** Fighting ground cover fires is a very dangerous occupation. Many firefighters have lost their lives or have been injured seriously while trying to control ground cover fires. Hurried decisions can be wrong decisions. Remember: The safety of personnel and equipment always comes first. The following conditions will prepare firefighters to understand or prevent from being placed into a wildland situation that could have less than favorable results.

*During 1985, 1400 homes and 44 lives were claimed by wildland fires. Each year since, there has been more than 300 homes destroyed by wildland fires in this country. Then in 1987 the unfortunate occurred, wildfires were responsible for more fatalities than structural fires combined in the US. (U. S. Forest Service)*

# INSTRUCTOR GUIDE

WILDLAND FIRE SAFETY

PRESENTATION	APPLICATION
<p>I. Ten Standard Firefighting Orders</p> <p>A. Fire Behavior</p> <ol style="list-style-type: none"><li>1. Keep informed of fire weather conditions and forecasts</li><li>2. Know what your fire is doing at all times, observe personally or use scouts</li><li>3. Base all actions on the current and expected behavior of the fire</li></ol> <p>B. Safety</p> <ol style="list-style-type: none"><li>1. Have escape routes for everyone and make them known</li><li>2. Post a lookout when there is possible danger</li><li>3. Be alert, keep calm, think clearly, act decisively</li></ol> <p>C. Operations Control</p> <ol style="list-style-type: none"><li>1. Maintain prompt communication with your personnel, your boss, and adjoining forces</li><li>2. Give clear instructions and be sure they are understood</li><li>3. Maintain control of personnel at all times</li></ol> <p>D. Ultimate Goal</p> <ul style="list-style-type: none"><li>• Fight fire aggressively, but provide for safety first</li></ul> <p>E. Safety can be addressed by the Standard Fire Orders and the Situations that Shout "Watch Out"</p>	<p>Show Video: "Wildfire Strikes Home"</p>

# INSTRUCTOR GUIDE

WILDLAND FIRE SAFETY

PRESENTATION	APPLICATION
<p>II. Ten Standard Firefighting Orders</p> <p>A. Keep informed of fire weather conditions and forecasts</p> <ol style="list-style-type: none"> <li>1. Weather is the major factor in fire behavior</li> <li>2. Keep informed of these conditions</li> <li>3. Your senses are valuable guides               <ol style="list-style-type: none"> <li>a) Feel-temperature and wind</li> <li>b) Sight-by watching the trees, clouds or smoke</li> <li>c) Hearing-fire weather forecasts or locals whom are familiar with expected behavior</li> </ol> </li> </ol> <p>B. Know what your fire is doing at all times, observe personally or use scouts</p> <ol style="list-style-type: none"> <li>1. Personally observe from vantage point</li> <li>2. Personally scout ahead</li> <li>3. Use helicopter or other aircraft</li> <li>4. Make certain that the findings are made known and shared with the firefighters               <ol style="list-style-type: none"> <li>a) Fire may have out flanked the crew</li> <li>b) Crews have been burned working on the head</li> <li>c) As fire increases-fire awareness must increase</li> </ol> </li> </ol>	<p>What are some considerations we can take, with respect to weather conditions?</p>          <p>What are some considerations we can take, with respect to the fire situation?</p>

# INSTRUCTOR GUIDE

WILDLAND FIRE SAFETY

PRESENTATION	APPLICATION
<p>C. Base all actions on the current and expected behavior of the fire</p> <ul style="list-style-type: none"> <li>• The action you take should be determined by everything that is happening and everything that you think may happen. <ul style="list-style-type: none"> <li>a) What is the fire doing now?</li> <li>b) What is the fire going to do later?</li> <li>c) What action is being taken now?</li> <li>d) What is the weather in the fire area?</li> <li>e) What is the weather going to do?</li> <li>f) What type of fuel is burning?</li> <li>g) What type of fuel is the fire heading for?</li> </ul> </li> </ul> <p>D. Have escape routes for everyone and make them known</p>	<p>What questions can we ask ourselves about the fire situation?</p>
<ul style="list-style-type: none"> <li>• Some good areas to select are <ul style="list-style-type: none"> <li>a) The burned area, if it is close enough</li> <li>b) Cut an escape line</li> <li>c) Note the natural barriers: rock ledges, riverbeds, streams, lakes, and slide areas</li> <li>d) Avoid areas with canopy intact</li> <li>e) Once these areas are selected-Make them known to crew members</li> </ul> </li> </ul>	<p>What considerations can we take, regarding escape routes?</p>



## WILDLAND FIRE SAFETY

-131-

## WILDLAND FIRE SAFETY

-132-

# INSTRUCTOR GUIDE

WILDLAND FIRE SAFETY

PRESENTATION	APPLICATION
<p>III. The Situations That Shout "Watch Out!"</p> <ul style="list-style-type: none"><li>A. The fire is not scouted and sized up</li><li>B. You are in country not seen in daylight</li><li>C. Your safety zones and escape routes are <u>not</u> identified</li><li>D. You're unfamiliar with weather and local factors influencing fire behavior</li><li>E. You're uninformed on strategy, tactics and hazards</li><li>F. Instructions and assignments are not clear</li><li>G. You have no communication link with crew members and supervisors</li><li>H. You're constructing a line without a safe anchor point</li><li>I. You're building a fireline downhill with fire below</li><li>J. You're attempting a frontal assault on the fire</li><li>K. There is unburned fuel between you and the fire</li><li>L. You cannot see the main fire, and you're not in contact with anyone who can</li><li>M. You're on a hillside where rolling material can ignite fuel below you</li><li>N. The weather is getting hotter and drier</li><li>O. Wind increases and/or changes direction</li><li>P. You're getting frequent spot fires across the fire line</li></ul>	<p>Transparencies The Situations that Shout "Watch Out!"</p>

# INSTRUCTOR GUIDE

WILDLAND FIRE SAFETY

PRESENTATION	APPLICATION
<p>Q. Terrain and fuels make escape to safety zones difficult</p> <p>R. You feel like taking a nap near the fireline</p>	

# INSTRUCTOR GUIDE

## SUMMARY

Fighting ground cover fires is a very dangerous occupation. Many firefighters have lost their lives or have been injured seriously while trying to control ground cover fires. Hurried decisions can be wrong decisions. Remember: The safety of personnel and equipment always comes first.

The need for each firefighter to become familiar with the equipment and the apparatus of the district will not only affect their job performance, but will also enhance their personal job skills with the operations of this equipment.

We have discussed the immediate concern of SAFETY with the Standard Fire Orders. We have discussed the Situations that Shout "Watch Out". We have also discussed the operations for Hit and Run Tactics for structural protection utilized during OES Runs.

Review your handout material and remember this is to increase your personal knowledge of wildland fire safety.

## EVALUATION

The student will be evaluated by completing a written examination.

## ASSIGNMENT

To be determined by the instructor(s).

## STANDARD FIRE FIGHTING ORDERS

1. Keep informed on FIRE WEATHER conditions and forecasts.
2. Know what your FIRE is doing at all times.
3. Base all actions on the current and expected BEHAVIOR of the FIRE.
4. Plan ESCAPE ROUTES for everyone, and make them known.
5. Post a LOOKOUT where there is possible danger.
6. Be ALERT, keep CALM, THINK clearly, and ACT decisively.
7. Maintain prompt COMMUNICATIONS with your boss, and adjoining forces.
8. Give clear INSTRUCTIONS and be sure they are understood.
9. Maintain CONTROL of your crew members at all times.
10. Fight fire aggressively, but provide for SAFETY FIRST.

## "FIRE ORDERS"

- |   |  |
|---|--|
| F | Fight fire aggressively, but provide for safety first.                           |
| I | Initiate all actions based on current and expected fire behavior.                |
| R | Recognize current weather condition and obtain forecasts.                        |
| E | Ensure instructions are given and understood.                                    |
| O | Obtain current information on fire status.                                       |
| R | Remain in communication with crew members, your supervisor and adjoining forces. |
| D | Determine safety zones and escape routes.  |
| E | Establish lookouts in potentially hazardous situations.                          |
| R | Retain control at all times.   |
| S | Stay alert and act decisively.   |

## SITUATIONS THAT SHOUT "WATCHOUT !"

1. The fire is not scouted and sized up.
2. In country not seen in daylight.
3. Safety zones and escape routes are not identified.
4. Unfamiliar with weather and local factors influencing fire behavior.
5. Uninformed on strategy, tactics and hazards.
6. Instructions and assignments are not clear.
7. No communication link with crew members and supervisors.
8. Constructing a line without a safe anchor point.
9. Building a fireline downhill with fire below.
10. Attempting a frontal assault on the fire.
11. There is unburned fuel between you and the fire.
12. Cannot see the main fire, and you're not in contact with anyone who can.
13. You're on a hillside where rolling material can ignite fuel below you.
14. Weather is getting hotter and drier.
15. Wind increases and/or changes direction.
16. You're getting frequent spot fires across the fire line.
17. Terrain and fuels make escape to safety zones difficult.
18. You feel like taking a nap near the fireline.

## IDENTIFICATION OF COMMON DENOMINATORS OF FIRE BEHAVIOR ON TRAGEDY FIRES

1. Most incidents happen on the smaller fires or on isolated sectors of larger fires.
2. Most fires are innocent in appearance before the "flare-ups" or "blow-ups." In some cases, tragedies occur in the mop-up stage.
3. Flare-ups generally occur in deceptively light fuels.
4. Fires run uphill surprisingly fast in chimneys, gullies, and on steep slopes.
5. Some suppression tools, such as helicopters or air tankers, can adversely affect fire behavior. The blasts of air from low flying helicopters and air tankers have been known to cause flare-ups.

**Be Alert. Watch Out For :**

**LIGHT FUELS  
WIND SHIFTS  
STEEP SLOPES AND CHIMNEYS**

## INFORMATION SHEET

TOPIC: Wildland Fire Situations That Shout "Watch Out!"

### INTRODUCTION:

Although primarily designed for hand crew personnel, the "18 Watch Out Situations" have definite application to all firefighters engaged in brush and/or wildland fire suppression.

### INFORMATION:

#### WILDLAND FIRE SITUATIONS THAT SHOUT "WATCH OUT!"

1. You are building a line downhill toward a fire.
  - a. Have escape routes established.
  - b. Extremely dangerous situation.
  - c. Stay with your crew.
  - d. Post lookouts as necessary, be alert to conditions.
  - e. Advanced fuels on upslope are pre-heated, will rapidly burn.
  - f. Spot fires on upslope can be expected.
  - g. Fire may generate momentum upslope and jump over hoselays or constructed hand lines.
2. You are on a hillside - rolling fire can ignite below you.
  - a. Properly construct trenches on slopes to hold rolling material.
  - b. Have established escape routes, know where they are.
  - c. Cut your way into spot fire areas, don't just walk through the green.
  - d. Post lookouts as necessary.
3. You feel the weather getting hotter and drier.
  - a. There will be a decrease in fuel moisture and humidity.
  - b. Forest fuels will burn faster.
  - c. Note for increase in hot spots appearing on the fire line.
  - d. Be more alert to changes in fire behavior.
4. You notice a wind change.
  - a. Fire may begin to spread in a different direction.
  - b. Your method of attacking and approach may now need to be changed.
  - c. Be alert, post lookouts as necessary.
  - d. Observe for changes in fire behavior.



# STUDENT INFO

## WILDLAND SAFETY

---

5. You are in heavy cover with unburned fuel between you and fire.
  - a. An extremely dangerous situation.
  - b. Always requires that lookouts be posted at strategic points for constant observation.
  - c. Line should be burned out behind you as it is being constructed.
  - d. Be in constant communication with your fire line supervisor.
  - e. Be prepared to use escape routes immediately.
6. You are in an area where terrain and/or cover make travel slow and difficult.
  - a. Know where the fire is at all times.
  - b. Know where you are going.
  - c. Stay as close to the burn as possible.
  - d. Don't bunch up, spread out and be alert for rolling rocks toward men below.
7. You are in country you have not seen in daylight.
  - a. Don't get lost, stay with your crew.
  - b. Advanced scouting is essential, observe for sheer dropoffs, shafts, rock slides, etc.
  - c. Use headlamps for all night activities.
  - d. Maintain communications with your fire line supervisor.
  - e. Stay close to fire line.
8. You are in an area where you are unfamiliar with local factors influencing fire behavior.
  - a. Be alert, observe for changes in fire behavior.
  - b. Watch for nature's danger signals.
  - c. Keep informed on weather forecasts.
  - d. Maintain communications with your fire line supervisor.
9. You are attempting a frontal assault on a fire with pumpers/tankers.
  - a. Watch for and suppress spot fires across road or line.
  - b. Have established escape routes.
  - c. Do not wander into the green at an oncoming fire, wait until it gets to where you are supposed to attack it.
  - d. Follow orders.
  - e. Be alert.
10. You are getting frequent spot fires over your line.
  - a. This is an indication fire conditions and weather are changing.
  - b. Don't become trapped between two fires.
  - c. If spot fires are taking off, this indicates lower fuel moisture.
  - d. Be alert to what is happening around you.

# STUDENT INFO

## WILDLAND SAFETY

---

11. You cannot see the main fire and you are not in communication with anyone who can.
  - a. Post a lookout or lookouts as necessary.
  - b. Area should be thoroughly scouted.
  - c. A dangerous situation at any time.
  - d. Be weather alert.
  - e. Obey your supervisor.
12. You have been given an assignment and/or instructions are not clear to you.
  - a. Write it down, repeat them back, until you clearly understand.
  - b. Communicate with your supervisor, keep him/her posted on your progress.
13. You feel like taking a little nap near the fire line.
  - a. Sleep in shifts if necessary.
  - b. Sleep as a group and only with permission.
  - c. Stay together.
  - d. Never sleep in the green.
  - e. Post a lookout.
14. Fire not scouted and sized up.
  - a. I. C or competent experienced firefighter.
15. Safety zones and escape routes not identified.
  - a. Areas void of vegetation or removed.
  - b. Large enough to accommodate all crew personnel.
  - c. Can deploy fire shelter with high chance for survival.
16. Uninformed on strategy, tactics and hazards.
  - a. Overall plan to achieve the fire suppression objectives.
  - b. Specific actions due to suppress the fire.
17. Constructing line without a safe anchor point.
  - a. Point or location not currently or likely in the future to be threatened by fire spread.
  - b. Place to begin your fire line where you're likely to hold you line.
18. Terrain and fuels make escape to safety zones difficult.
  - a. Take time to clear routes to safety zones.
  - b. Mark to define the route.

# INSTRUCTOR GUIDE

SAFETY PRECAUTIONS TO BE USED  
AROUND AIRCRAFT

---

## WILDLAND FIRE FIGHTING ESSENTIALS

### Lesson Plan # 13

**TOPIC:** Safety Precautions To Be Used Around Aircraft

**LEVEL:** I

**TIME:** 30 minutes

**BEHAVIORAL OBJECTIVE:**

**Given:** A written examination

**Performance:** The student will identify the safety precautions to be used when working around fire fighting aircraft

**Standard:** With 70 % accuracy according to IFSTA, Ground Cover Firefighting Practices

**REFERENCES:** CDF, Handbook 1190  
IFSTA, Ground Cover Firefighting Practices, 2nd Edition, Pages 126 - 127

**MATERIALS NEEDED:** Overhead projector and screen, flip chart and easel, student handouts, one per student, visual aids

**PREPARATION:** In recent years a number of newer aircraft have come into the Air Attack field, allowing for a wider variety to choose from. Air Attack now offers a modern, sophisticated attack weapon. More often than not, air attack forces will be available for use on wildland fires, especially when exposures or excessive damage potential exists. Because working around these aircraft can be extremely dangerous, it is essential that fire fighters are aware of the safety precautions that must be observed.

## SAFETY PRECAUTIONS TO BE USED AROUND AIRCRAFT

-142-

# INSTRUCTOR GUIDE

SAFETY PRECAUTIONS TO BE USED  
AROUND AIRCRAFT

PRESENTATION	APPLICATION
<p>B. There are three types of airtanker drops:</p> <ol style="list-style-type: none"><li>1. Split<ul style="list-style-type: none"><li>• Single drop from one door at a time</li></ul></li><li>2. Trail<ul style="list-style-type: none"><li>• Overlapping series of drops from 2 to 8 doors</li></ul></li><li>3. Salvo<ul style="list-style-type: none"><li>• Total load at one time</li></ul></li></ol> <p>C. Aircraft are used on wildland fires with the intention of attaining prompt control</p> <ol style="list-style-type: none"><li>1. Air attack is most effective when:<ol style="list-style-type: none"><li>a) Making fast initial attack on small fires</li><li>b) When followed up by fast, aggressive ground action</li></ol></li><li>2. Airtankers are used for making fire retardant drops from the air to the fire line</li></ol> <p>D. The safety rules regarding airtanker operations were developed for use by all personnel working on the fire line. Their operations are directed by an Air Attack who is in charge of air operations, The Air Attack flies above the fire and tells the airtankers where their drops are to be made. Air Attack operations are always coordinated with the Incident Commander who is directing all suppression operations.</p>	<p>What are the three types of retardant drops that airtankers make?</p>

## SAFETY PRECAUTIONS TO BE USED AROUND AIRCRAFT

What should you do after a retardant drop has been made?

# INSTRUCTOR GUIDE

SAFETY PRECAUTIONS TO BE USED  
AROUND AIRCRAFT

PRESENTATION	APPLICATION
<ol style="list-style-type: none"> <li>3. Heavy application of retardant on surfaced roads can be hazardous and should be washed down as soon as possible</li> <li>4. Retardant may also damage agricultural or ornamental vegetation and action should be taken to minimize this damage</li> <li>5. Remove retardant from apparatus; may damage paint</li> </ol> <p>II. Rotary Winged Aircraft</p> <p>A. Terminology</p> <ol style="list-style-type: none"> <li>1. Helitack Crew <ul style="list-style-type: none"> <li>• A crew of individuals who are assigned to operations with a helicopter</li> </ul> </li> <li>2. Copter, Helicopter <ul style="list-style-type: none"> <li>• A rotary-winged aircraft</li> </ul> </li> <li>3. Helibase <ul style="list-style-type: none"> <li>• Location within the general incident area for parking, fueling, maintenance, and loading of helicopters</li> </ul> </li> <li>4. Helispot <ul style="list-style-type: none"> <li>• A location where a helicopter can take off and land</li> </ul> </li> <li>5. Helicopter Coordinator <ul style="list-style-type: none"> <li>• Responsible for coordinating tactical or logistical mission(s) at a incident</li> </ul> </li> </ol>	<p>What is a helibase?</p> <p>What is a helispot?</p>

# INSTRUCTOR GUIDE

SAFETY PRECAUTIONS TO BE USED  
AROUND AIRCRAFT

PRESENTATION	APPLICATION
<p>6. Helibase Manager</p> <ul style="list-style-type: none"> <li>• Manage resources and supplies dispatched to the helibase</li> </ul> <p>7. Helitack Mobile Service Unit (HMSU)</p> <ul style="list-style-type: none"> <li>• Helicopter support vehicle</li> </ul> <p>8. Main Rotor, Tail Rotor</p> <p>9. Skids</p> <p>10. Rigid tank, bucket</p> <p>11. Seat belts and shoulder harness</p>	
<p>B. Use</p> <ol style="list-style-type: none"> <li>1. Reconnaissance</li> <li>2. Ferrying personnel or supplies</li> <li>3. Evacuation</li> <li>4. Water/Retardant/Foam Drops</li> <li>5. Search and Rescue</li> </ol>	<p>What are some uses for helicopters?</p>
<p>C. Safety</p> <ol style="list-style-type: none"> <li>1. Approach and departure               <ol style="list-style-type: none"> <li>a) Get the pilot's attention and permission before approaching the helicopter</li> <li>b) Always approach or depart in a crouched position. Gusts of wind could cause the rotor blades to drop dangerously low to the ground</li> </ol> </li> </ol>	<p>Name some safety rules used when working with helicopters.</p>



# INSTRUCTOR GUIDE

SAFETY PRECAUTIONS TO BE USED  
AROUND AIRCRAFT

PRESENTATION	APPLICATION
<ul style="list-style-type: none"> <li>c) Your safety helmet will be held securely in your hand to prevent it from being blown away and/or into the rotor blades</li> <li>d) Never approach or depart a helicopter from ground which is upslope from the main rotor when it is turning, or under bad lighting conditions, rotors are almost invisible</li> <li>e) Keep clear of the main and tail rotors at all times. Do not walk to the rear of the helicopter when entering or exiting</li> <li>f) Carry all long handled tools in such a manner that the handles will not be inadvertently raised into the rotor path</li> </ul> <p>2. Working around helibase</p> <ul style="list-style-type: none"> <li>a) Stay at least 100 feet away from helicopters at all times, unless you have a specific job that requires otherwise. Your presence can cause confusion and disrupt the pilot's concentration</li> <li>b) Do not face a landing helicopter unless you are wearing goggles</li> <li>c) Do not remain in an area that is constantly under the flight path of any helicopter</li> <li>d) No smoking within 50 feet of the helicopter or fueling areas</li> <li>e) Learn and use the standard helicopter hand signals</li> </ul>	

# INSTRUCTOR GUIDE

SAFETY PRECAUTIONS TO BE USED  
AROUND AIRCRAFT

PRESENTATION	APPLICATION
<p>3. In-flight safety</p> <ul style="list-style-type: none"><li>a) No smoking in the helicopter</li><li>b) Use the seat belt and keep it secured until the pilot instructs you to leave the helicopter</li><li>c) Make sure all loose gear and helmets, maps, papers, etc., are held securely in your hands, to prevent them from being blown about the helicopter or out the window</li><li>d) Never slam the doors of a helicopter. The doors do not have spring loaded locks, so the handles must be physically turned to secure the door</li><li>e) Do not let any of your gear get in the way of the pilot or the controls</li><li>f) Never throw ANYTHING out of a helicopter</li><li>g) Do not talk to the pilot during take-off</li><li>h) Be alert for hazards such as other aircraft and especially telephone and power lines</li></ul>	<p>Name some inflight safety rules used with helicopters.</p>

# INSTRUCTOR GUIDE

SAFETY PRECAUTIONS TO BE USED  
AROUND AIRCRAFT

---

## SUMMARY

Aircraft can be a very valuable tool in combating wildland fires. It is, however, extremely important that all ground crews understand and follow all safety precautions.

## EVALUATION:

The student will be evaluated by completing a written examination.

## ASSIGNMENT:

To be determined by the instructor(s).

# INSTRUCTOR GUIDE

FUNDAMENTALS OF FIRE SHELTERS

---

## WILDLAND FIRE FIGHTING ESSENTIALS

### Lesson Plan # 14

**TOPIC:** Fundamentals Of Fire Shelters

**LEVEL:** I

**TIME:** 2 hours

**BEHAVIORAL OBJECTIVE:**

**Given:** A written examination

**Performance:** The student will demonstrate a working knowledge of fire shelters

**Standard:** With a minimum 70 % accuracy according to the materials given in this lesson

**REFERENCES:** Standards for Survival, National Wildlife Coordinating Group, 1987, BIFC

**MATERIALS NEEDED:** Appropriate audio/visual equipment and materials

**PREPARATION:** Over the past few years it has been recognized that the fire shelter is a valuable tool for saving firefighters lives. Fire shelters were designed to provide personal protection in an emergency situations when conditions result in firefighters being trapped in wildland fires. Fire shelters were not designed to provide for noncompliance with proven safety practices or policies. Know and follow your Standard Fire Orders and the Situations that Shout "Watchout".

In order for the shelter to be effective, the user must be well trained and trained to utilize the shelter within seconds when a fire flare-up situation occurs threatening to overrun the firefighter's position.

# INSTRUCTOR GUIDE

## FUNDAMENTALS OF FIRE SHELTERS

PRESENTATION	APPLICATION
<p>I. Introduction</p> <p>A. The fire shelter is an effective lifesaving device. On one fire alone it was credited with saving 73 lives</p> <ul style="list-style-type: none"><li>• However, the fire shelter is not a means to take chances and is not a substitute for following the Fire Orders</li></ul> <p>II. Fire Shelter</p> <p>A. Two most important functions of the fire shelter</p> <ol style="list-style-type: none"><li>1. To provide cooler, breathable air to protect your lungs and airways<ul style="list-style-type: none"><li>• You can survive third-degree burns, you can not survive scorched lungs and airways</li></ul></li><li>2. To minimize radiant heat</li></ol> <p>B. Mandatory Carrying</p> <ul style="list-style-type: none"><li>• In certain instances (very few) a shelter may not be worn</li></ul>	<p>Video Tape: "Butte Fire Shelter Deployment"</p> <p>Video Tape: "Your Fire Shelter"</p> <p>What are the two most important functions of the Fire Shelter?</p>

# INSTRUCTOR GUIDE

## FUNDAMENTALS OF FIRE SHELTERS

PRESENTATION	APPLICATION
<p>C. Deployment</p> <ol style="list-style-type: none"><li>1. There are instructions for proper deployment inside the shelter's carrying case, but don't rely on them in an actual entrapment situation, There may not be time to read the instructions</li><li>2. Select a deployment site in a natural firebreak, a wide dozer line, an area already burned over, or an area containing only a light fuel. Scrape or burn out a 4 by 8 foot or larger spot, if time permits</li><li>3. Avoid areas with heavy brush, trees with low branches, logs, snags and flammable supplies. Keep away from narrow draws, chutes and chimney<ul style="list-style-type: none"><li>• Tends to funnel smoke, flames, and hot gases</li></ul></li><li>4. If there is no pull tab, or if it breaks off in your hand, use a knife or something sharp to open the vinyl bag<ul style="list-style-type: none"><li>• Use care not to damage the shelter</li></ul></li><li>5. Place the shelter so your feet are toward the oncoming flame front. The foot end will become the hottest spot in the shelter and it is easier to hold it down with your feet</li></ol> <p>D. Items to wear and take into the fire shelter</p> <ol style="list-style-type: none"><li>1. Gloves<ul style="list-style-type: none"><li>• Without gloves on, it is very difficult to hold down the shelter while in the entrapment</li></ul></li><li>2. Fieldpack and Hardhat<ul style="list-style-type: none"><li>• The fieldpack and hardhat will help keep the shelter away from your body. Remove any hazardous item(s) from the fieldpack and toss them away from the deployment area</li></ul></li></ol>	

# INSTRUCTOR GUIDE

## FUNDAMENTALS OF FIRE SHELTERS

PRESENTATION	APPLICATION
<p>3. Radio</p> <ul style="list-style-type: none"><li>• Maintain communications with other trapped firefighters by radio, if you have one or by shouting back and forth</li></ul> <p>4. Water</p> <ul style="list-style-type: none"><li>• Drink water so you continue to sweat, which aids body cooling. Never wet clothing or wear moistened face or respiratory protection like a wet bandana</li></ul> <p>E. Other items of concern</p> <p>1. Smoke</p> <ul style="list-style-type: none"><li>a) Smoke is frequently not a problem in actual shelter deployments, because the wind sucks the smoke out of the shelter. However, holes and tears may allow additional smoke to enter</li><li>b) Usually, the greatest amount of smoke will be present when you first get under the shelter</li></ul> <p>2. Inhalation of Heat and Smoke</p> <ul style="list-style-type: none"><li>a) Keep your nose pressed to the ground, as much as possible</li><li>b) Digging a shallow hole for your face and breathing through a dry bandana will help reduce the inhalation of heat and smoke</li></ul> <p>3. Pinholes and Tears</p> <ul style="list-style-type: none"><li>a) Pinholes and small tears will not reduce your protection</li><li>b) No matter how big the hole or tear, the shelter may have, you are still better off inside it</li></ul>	

# INSTRUCTOR GUIDE

## FUNDAMENTALS OF FIRE SHELTERS

PRESENTATION	APPLICATION
<p>4. Length of Stay</p> <ul style="list-style-type: none"><li>a) There is no fixed time to stay under the shelter</li><li>b) Leaving too soon can expose your lungs to super-heated air or excessive smoke</li><li>c) The best strategy is to stay under the shelter until you notice temperatures have significantly cooled or a supervisor tells you it is safe to come out</li></ul> <p>5. Double Occupancy</p> <ul style="list-style-type: none"><li>a) Never plan to share a shelter</li><li>b) In actual entrapments, two people have used one shelter, but the risk of injury increases dramatically by sharing</li><li>c) The shelter is designed for one person and the extra space is needed for insulation</li></ul> <p>6. Entrapment without a Fire Shelter</p> <ul style="list-style-type: none"><li>a) Look for an indentation in the ground</li><li>b) Do not use a chute, chimney, drainage, etc.</li><li>c) The number one priority is to protect your lungs and airways</li></ul>	



# INSTRUCTOR GUIDE

FUNDAMENTALS OF FIRE SHELTERS

PRESENTATION	APPLICATION
<p>III. Inspection</p> <p>A. Inspection Interval</p> <ol style="list-style-type: none"><li>1. Inspections should be made at the beginning and end of each fire season and whenever a shelter is carried on a person or in a vehicle for more than 14 days</li><li>2. Abrasion is the most common damage. Remove the shelter from service if<ol style="list-style-type: none"><li>a) The vinyl bag is gray and you cannot see the shelter</li><li>b) Aluminum particles are in the bottom of the bag</li></ol></li><li>3. Look for tears along folded edges. If tears in the foil exceed 1 inch long, remove the shelter from service</li><li>4. If dents or punctures in the foil are over 1 inch wide or if 1/2 inch or more of foil is missing, remove the shelter from service</li><li>5. A shelter deployed for inspection or demonstration should not be used on the fireline</li></ol> <p>IV. Care And Handling</p> <ol style="list-style-type: none"><li>A. Keep the shelter away from sharp objects that may puncture it</li><li>B. Don't load heavy objects on top of the shelter</li><li>C. Avoid as much rough handling as possible</li><li>D. Don't lean against objects when wearing the shelter</li><li>E. Don't sit on the shelter or use it as a pillow</li></ol>	

# INSTRUCTOR GUIDE

## SUMMARY

A fire shelter is an aluminized, heat reflective, personal, protective pup-tent. It is required when performing fireline work. It is simple to use and almost foolproof. It has been proven to work in actual field conditions and is an accepted life-saving device.

It is not justification for slighting quality training in fire behavior, or a reason to ignore erratic and extreme fire behavior indicators. It is not a substitute for the Standard Fire Orders or a replacement for the "Watch Out Situations". It is not a reason to forget to use common sense or an excuse for mediocre performance. And it should never be used, because it is a firefighters last-ditch attempt to avoid the consequences of firefighting mistakes!! It is intended to be used as **YOUR LAST RESORT!**

## EVALUATION

The student will be evaluated by completing a written examination on the information presented in this instruction.

## ASSIGNMENT:

To be determined by the instructor(s).

## INFORMATION SHEET

TOPIC: Fire Shelters

### INTRODUCTION:

Since mandatory carrying of the fire shelter on the fireline, it has saved the lives of more than 140 firefighters. At the same time, it has prevented countless serious injuries and illnesses from burns and smoke inhalation.

### INFORMATION:

#### **A Proven Lifesaver**

The fire shelter saves lives by reflecting radiant heat. This means two things: There's a supply of more breathable air in-side the shelter, and the shelter gives you a means to protect airways and lungs from flames and hot gases—the two leading killers in an entrapment.

But the shelter isn't fail-safe. Direct flame contact can destroy the shelter's protective properties. Never go into a more dangerous area or situation because you're carrying the fire shelter.

If entrapment seems likely, attempt proven escape procedures first. If escape plans fail or become impossible to execute, then use your shelter.

This booklet explains how the shelter protects. It stresses the importance of training and when and where to deploy the shelter. It tells you what to expect during entrapment. And it talks about inspection steps that will keep worn shelters off the fireline.

#### **Designed to Protect**

Because the fire shelter protects primarily by reflecting radiant heat, use instructions stress deploying the shelter as far as possible from fuel concentrations. Set up the shelter well away from both natural fuels and flammable equipment.

The shelter is aluminum foil bonded to fiberglass cloth with a nontoxic, high temperature adhesive. These are the best lightweight materials available for maintaining structural integrity in extreme heat and high wind.

The pup-tent shape lets you lie flat against the ground. This exposes less of the body to radiant heat and more to ground cooling. With your face pressed to the ground, you're in the best position to breathe cooler, cleaner air. The shelter's low profile exposes it to less turbulence and flame contact, while providing better cooling. The foil reflects away 95 percent of a flame front's radiant heat. The remaining 5 percent is absorbed. This gradually makes it hotter inside the shelter. With prolonged exposure, temperatures can reach over 150° F. But you can survive such temperatures dry saunas often reach 190° F. Stay calm and stay in your shelter.

The foil/cloth laminate may emit some smoke during prolonged exposure to heat. But it will be minimal, and it is nontoxic. Don't panic. The shelter will still protect you.

The shelter hold-down straps and perimeter skirt make it unlikely the shelter can be blown away if buffeted by high winds. The skirt also helps keep smoke and heat out.

### Training

Training in shelter deployment and use is vital. It takes an untrained person several minutes to deploy and occupy a shelter. After three or four trials, this can be cut to 25 seconds or less. In an entrapment, a minute or two can be critical. Shelter deployment should be a mandatory part of your training.

Train wearing gloves and hardhat—wear web gear if you have it. The best training sites are in wooded areas with natural obstacles, so different site selections can be discussed.

Some entrapped firefighters suffered from claustrophobia while in their shelters. Fear of confined spaces and the dark combined with extreme heat, turbulence, and noise can cause panic. During training, spend enough time under a shelter to find out if you're claustrophobic. If you are, increase your shelter time gradually in stages. This should help you adapt.

Whether you're claustrophobic or not, in an actual entrapment, deploy your shelter near others. Being able to talk back and forth and reassure each other helps prevent panic.

### Water Can Make the Difference

Water is vital in an entrapment. So always keep well hydrated when fighting fire. During your work shift, drink often, and keep your canteens filled. Off duty, drink lots of fluids. This way, should you ever become entrapped, you'll be adequately hydrated to promote sweating, the body's primary means of cooling. If entrapped, continue to sip water to replace lost fluids. Once your body stops sweating, a feeling of panic will follow. So stay well hydrated and always take canteens into the shelter.

If you anticipate entrapment or escape, never wet yourself down. Wet clothing conducts heat to the skin five times faster than dry clothing, making burns likely. In a fire shelter, wet clothing is doubly hazardous. It rapidly conducts heat if hot shelter material touches clothing. And it increases humidity. At equivalent temperatures, breathing moist, hot air will damage airways and lungs sooner than dry, hot air.

### Deploying Your Shelter

The key is recognizing when deployment is your only option. When considering escape, remember, you can hold your breath for only about 15 seconds while running through flames or super-heated air.

Know how long it takes to reach your safety zone and get into your shelter. Crew bosses should identify likely escape routes and safety zones—the best fire shelter deployment areas—beforehand.

If you are part of a crew, your supervisor decides where and when to deploy. Follow orders. If you're not in a crew, or have become separated from it, you must rely on your own judgment.

Remember Follow proven escape procedures first. Use your fire shelter as a last resort. But give yourself enough deployment time. Don't panic. Have confidence in the shelter and in yourself.

The shelter works best in light fuels such as grass, in which the flame front passes quickly. Try to pick natural firebreaks— meadows, creek beds, rock slides, the lee side of ridgetops and knobs, and depressions in the ground. Low spots will have less heat and smoke. Wide firelines like dozer lines, drainage ditches on the uphill side of roads, and burned over areas normally make good deployment sites. In larger areas, don't let trucks, dozers, and other equipment occupy the best deployment sites.

Avoid heavy brush, trees with low branches, and logs and snags. Remember, fuels include gasoline cans, supply boxes, packsacks, and other firefighting gear. Keep away from narrow draws, chutes, and chimneys. They tend to funnel smoke, flames, and hot gases.

Some firefighters who have been trapped by fires say they deployed their shelters only reluctantly when entrapment appeared uncertain. They were concerned about the cost of opening a shelter that might not be needed.

Even though you should deploy your shelter only as a last resort, time is critical when entrapped. Play it safe. Give yourself ample time. Don't let the cost of opening a shelter become a factor in your decision. If the shelter isn't needed, carefully refold it and put it back in its case for reuse until you get a new one. Save the opened shelter for training.

Once in a deployment area, pull the red tab on the vinyl bag. Don't wait until the fire front gets closer before deciding to open the shelter. Sometimes the pull tab separates from the tear strip. When this happens, a small hole is usually left in the bag. Use this hole to start the tear strip. If there is no hole, use a sharp object to puncture the vinyl along the tear strip. Insert a finger into the hole and pull down along the perforations. Another alter-native is to cut open the end of the bag with a knife. Remove the shelter and open it up. You may have to remove your gloves to get the shelter out of the bag. New fire shelter bags have a large pull ring tab to allow opening while wearing gloves. If you remove your gloves to open the shelter, put them back on.

Now, select a specific deployment spot. It should be as free of fuels as possible. Begin scrapping away what fuels there are. Clear an area 4 by 8 feet (larger if you have time) down to mineral soil. A clean area minimizes flame contact with the shelter and the chance of fuels smoldering near by or even underneath the shelter.

While preparing a site, keep an arm or leg through a shelter strap. Otherwise, you may lose your shelter in the high winds generated by the flame front. With your shelter open and handy, if the fire front arrives before your spot is completely cleared, you can be under your shelter in a matter of seconds. Leave handtools outside. Tool blades can cut shelter cloth. If you have web gear, wear it into the shelter. Remove any hazardous items like gasoline and fusees and toss them well away from the deployment area. The pack will help keep the shelter from touching you if turbulence collapses it. Take your canteens into the shelter to prevent dehydration, continue sipping water when you're in the shelter.

Place your shelter so your feet are toward the oncoming flames. The end facing the advancing fire will become the hottest part of the shelter and easier to hold down with your feet.

### Entrapment

Once you've prepared your spot, get into your shelter (wearing gloves, hardhat, and web gear) and stay there. Keep firmly in mind that you must protect your airways and lungs from the fire's hot gases. Turbulence can lift a shelter edge, letting in hot gases. Flame fronts can generate winds of 50 mph or more, so you must hold the shelter down firmly. Gloves are critical. Without them you may burn your hands and be unable to hold down the shelter.

Keep your nose pressed to the ground as much as possible. There's usually about a 6-inch layer of cooler, cleaner air right at ground level. Then to help reduce the heat and smoke you in-hale, breathe through a dry bandana—we'll talk about why it's so important to keep it dry in a moment.

If you have to adjust the shelter, remember, your lungs are vulnerable. Try not to breathe until your face is back against the ground.

During entrapment, talk to other trapped firefighters by radio or shout back and forth. If someone yells at you, try to let them know you're OK. If someone doesn't respond to your shouts, do not leave your shelter. Fire entrapment can induce panic, and some people may not answer until after the danger has passed. During very turbulent conditions, it will take all your effort to hold down the shelter. Also remember, at a fire's peak, the noise can be deafening, and you may be unable to hear anyone. Keep calm. As soon as the noise subsides, resume talking to each other.

You may want to move your shelter as the flame front changes position or to be closer to someone in trouble. Move by crawling turtle fashion, keeping the shelter edges close to the ground. Moving is risky. It exposes airways and lungs to hot flames and gases and allows the shelter to fill with smoke. There's a chance of losing your shelter to high winds because you can't hang onto it as well while moving. And you can do little to aid another person. Don't move unless it's absolutely necessary.

Never plan to share a shelter, unless someone is without one. In actual entrapments, two people have used one shelter. But the shelter is designed for one person. The extra space helps insulate you from the heat and minimizes body contact with hot shelter material. Sharing greatly increases your risk of injury. If sharing is unavoidable, lie face to face, noses pressed to the ground.

The fire shelter often has pinholes and cracks along its folds. Entrapped firefighters say that fire light entering these cracks look like hot coals or embers on clothing. These pinholes do not reduce your protection. No matter how big a hole or tear your shelter may have, you are still better off inside the shelter. Use proper care and routine inspection to control damage.

There is no fixed time to stay under your shelter. Don't move until the flame front has passed. A drop in noise, wind, heat, and change in color are usually tip offs that it's safe to leave the shelter. But play it safe. Stay put until you notice temperatures have cooled significantly or a supervisor tells you it's safe to come out. Leaving a shelter too soon can expose your lungs to super-heated air or dense smoke.

In a prolonged entrapment, temperatures within the shelter can range from 150° to 200° F. Studies indicate that by taking short, shallow breaths through the nose, air as hot as 400° can be inhaled at very low humidity for a brief time. So it's important to keep humidity low. Never wet clothing or wear moistened face or respiratory protection like a wet bandana. Instead, drink water so you continue to sweat, which aids body cooling.

Other studies conclude that such high temperatures, while tolerable for a time, can induce panic. Panic can cause people to leave their shelters and make a run for it a far more hazardous gamble than staying put. Try to take advantage of that layer of fresh air that usually can be found at ground level. After the main fire front has passed, you can raise a side of the shelter—away from the hottest fire—a few inches to let in fresher, cooler air. Turn your face away from the side you lift, hold your breath, and lift slowly as a precaution against a blast of hot air.

In a long entrapment, as the foil continues to heat up, the inside surface of the glass cloth becomes hot enough to burn you. For added protection, you should be wearing hardhat, flame-resistant clothing, gloves, and web gear if you have it. Usually, the shelter fabric doesn't touch you. But entrapped firefighters tell of turbulent, fire generated winds strong enough to blow the shelter against them. Gloves will let you push the cloth away from your body.

If the cloth temperature rises above 500° F, the adhesive starts to break down. Sometimes the glass/foil cloth separates. It can drape down and burn you. But more often it delaminates gradually, cooling first. The foil stays in place and continues to protect. If flames contact the shelter, the glass/foil fabric heats up much more rapidly. If flame contact is prolonged, the aluminum foil can melt away, reducing protection. Even if this happens, it is still safer inside the shelter. Your flame-resistant clothing becomes your backup protection. It's even more critical to keep your nose pressed to the ground.

Direct contact with flames is the biggest threat to your shelter. It's vital to deploy it in a spot that offers the least chance of such contact.

Remember, once you commit yourself to the shelter, stay there. No matter how bad it gets inside, it's worse outside. If you panic and leave the shelter, one breath of hot gases could scorch your lungs. Suffocation will follow. Most firefighters who perish, die from heat-damaged airways and lungs not external burns. Protect your airways and lungs at all costs by staying in your shelter.

Should you ever be entrapped without your shelter, protecting your lungs and airways is your one chance for survival. Follow the guidelines for site selection and preparation for the shelter. Lie face down in the lowest depression on the site you pick. Try to dig a hole for your face and nose. Breathe through your nose. Mentally prepare yourself to stick it out, keeping your face pressed to the ground, no matter how painful it gets. It is your only chance.

### Inspection

The shelter has an indefinite shelf life because its materials do not degrade in normal fire cache storage. Nevertheless, inspect new shelters. They could have been damaged in shipment or during storage. Shelters with the oldest manufacture dates should be issued first.

The aim of inspection is to ensure that only serviceable shelters reach the fireline. Don't assume a new carrying case contains a new shelter. Inspect it.

First inspect the vinyl plastic bag. Is it free of punctures and dents? Is the quick-opening strip unbroken and the tab intact? If you find a hole in the vinyl bag, or the quick-opening strip is broken but the shelter is still serviceable, the bag can be re-sealed. Simply remove any particles that could cause abrasion. Then reseal with a durable tape.

Abrasion is the most common shelter damage, and it can be spotted through the bag. Typically, the aluminum foil is rubbed from the fiberglass cloth. This occurs on the outer surface or outside edges. Remove the shelter from service if you see extensive edge abrasion.

If aluminum particles have turned the clear vinyl bag gray so you can't see the shelter, serious abrasion has occurred. Remove the shelter from service.

Debris in the bottom of the bag indicates excessive abrasion. Remove the shelter from service.

Look for tears along folded edges. Tears are most likely to occur at the two ends where all the sharp edges come together. Damage is less common along the wider folds. Remove shelters from service when tears exceed 1 inch long. Also look for dents or punctures in aluminum foil. These can be caused by rough handling; or by pressing the shelter against rocks, tree branch stobs, or other sharp objects. Remove from service shelters with dents or punctures in foil over 1 inch wide or with 1/2 inch or more of foil missing.

If you're unsure about the condition of a shelter, slit open the vinyl bag along the end opposite the red pull tab. Carefully examine the shelter by lifting the first several folds. Don't fully open the shelter. A shelter deployed for inspection or demonstration should not be used on the fireline. Check edges and outer surfaces for abrasion. These areas often wear as the shelter is carried. If serious abrasion exists, remove the shelter from service. If the shelter is undamaged, reseal the bag with durable tape.

You may want to determine the condition of a batch of shelters returned from the field. Pick a shelter that appears to be in the worst condition. Open and examine it against the light from the inside. You'll see small cracks and pinholes along the folds and seams. Many cracks and pinholes occur in the shelter fabric during manufacture, particularly in the sewing and folding steps. Dime size holes or smaller don't impair the shelter's ability to reflect away radiant heat. If holes are larger than dime size, inspect more samples to determine if the entire batch should be removed from service. Such defective shelters make excellent training aids. But they should be clearly marked "For Training Only" so none get on the fireline.

### Care and Handling

Firefighting can be hard work and rough on equipment. So the fire shelter is expected to have a limited service life. But a little care can extend that life even on the fireline.

The shelter is an important piece of protective gear. Treat it accordingly:

- Keep it away from sharp objects that may puncture it.
- Don't load heavy objects on top of it.
- Avoid as much rough handling as possible.
- Don't lean against objects when wearing the shelter.
- Don't sit on it or use it as a pillow.

Take only serviceable shelters to the fireline. Serviceability is determined by the inspection steps outlined above. We recommend inspection at the beginning and end of each fire season and whenever a shelter is carried on a person or in a vehicle for more than 14 days. Always inspect a fire shelter when it's issued to you. It's your life at stake.

### A Final Word

Many firefighters once thought of the fire shelter as just excess baggage. Then they were trapped by wildfire . . . and survived thanks to their shelters. Now, they consider the fire shelter a vital safety item, and treat it that way. Do the same.



# INSTRUCTOR GUIDE

HOW TO DEPLOY A FIRE SHELTERS

---

## WILDLAND FIRE FIGHTING ESSENTIALS

### Lesson Plan # 15

**TOPIC:**                    **How To Deploy Fire Shelters**

**LEVEL:**                    II

**TIME:**                    30 minutes

**BEHAVIORAL OBJECTIVE:**

**Given:**                    A fire shelter in a simulated fire situation with wind conditions

**Performance:**           The student will deploy the fire shelter with all safety considerations demonstrated

**Standard:**                Completing all operations within 30 seconds according to the job breakdown with no safety errors

**REFERENCES:**           Fire shelter's manufacturers instructions

**MATERIALS NEEDED:** Training fire shelter, shovel, stopwatch and smoke ejector, simulated wind conditions (will require the use of smoke ejector for cross winds), one job breakdown per student and one job breakdown for evaluation per student

**PREPARATION:**           Over the past few years it has been recognized that the fire shelter is a valuable tool for saving fire fighters lives. Fire shelters were designed to provide personal protection in an emergency situations when conditions result in fire fighters being trapped in wildland fires. Fire shelters were not designed to provide for noncompliance with proven safety practices or policies. Know and follow your Standard Fire Orders and the Situations that Shout "Watchout".

# INSTRUCTOR GUIDE

## HOW TO DEPLOY A FIRE SHELTERS

OPERATIONS	PRESENTATION	KEY POINTS
1. Select area for deployment		1a. Confirming it is clear of heavy fuels, snags, rolling rocks, etc. b. Cleaning area down to mineral soil, if time allows c. Minimum area of 4' X 8'
2. Remove shelter		2a. From the carrying case b. By unsnapping case c. With non-working hand d. Discarding case
3. Pull plastic tab		3a. Grabbing the red tab strip b. To open the plastic case
4. Remove and unfold shelter		4a. Measures 6 1/2 feet long, 3 feet wide and 3 feet high b. Until semi-flat
5. Shake open the shelter		5a. Opening remaining folds b. To form tent shape for entry
6. Stand shelter upright		6a. Maintaining firm grip of shelter b. Facing the opening c. Note: At no time should you let go of the shelter
7. Enter shelter		7a. Stepping in upright position b. With body behind straps c. Turning body to face opening d. With your back to oncoming fire

# INSTRUCTOR GUIDE

HOW TO DEPLOY A FIRE SHELTERS

OPERATIONS	PRESENTATION	KEY POINTS
8. Take position		<ul style="list-style-type: none"><li>8a. Grasping upper straps with corresponding hands</li><li>b. Feet anchoring bottom straps</li><li>c. Making sure the fire shelter is spread to its fullest</li><li>d. Maintaining prone position, face down</li><li>e. Note: Your feet should be pointed in the direction of the oncoming fire.</li></ul>
9. Remain calm		<ul style="list-style-type: none"><li>9a. Take short breathes breathing through nose if air is hot</li><li>b. Maintaining control of fire shelter</li><li>c. Note: fire conditions can blow fire shelter away if not secured</li></ul>
10. Hold position		<ul style="list-style-type: none"><li>10a. Remaining together as a group with other fire fighters</li><li>b. Communicating if possible with portable radio or voice to members of your group</li><li>c. Until you are certain that it is safe to come out</li></ul>

# INSTRUCTOR GUIDE

## HOW TO DEPLOY A FIRE SHELTERS

---

### APPLICATION

Have each student perform the job according to the job breakdown under instructor's supervision with smoke ejector in service to simulate winds.

Instructor will arrange the students so that all can see the demonstrations and equipment.

Instructor will demonstrate the job to entire class.

Instructor will answer questions during each demonstration.

Instructor will observe each student perform at least once.

### EVALUATION

Students will deploy the fire shelter completing all operations within 30 seconds according to the job breakdown.

The student will deploy the fire shelter without the job breakdown sheet.

Instructor will not answer questions during the Evaluation.

Instructor will evaluate each student individually using the job breakdown checklist and stopwatch.

Student shall identify all of the safety considerations through oral questions during the evaluation.

### ASSIGNMENT

To be determined by the instructor(s).

### WILDLAND FIRE FIGHTING ESSENTIALS

#### Lesson Plan # 15 (Optional Test)

**TOPIC:**                      **How To Deploy Fire Shelter**

**TEST PROCESS:**            The objective is to have the firefighter deploy a fire shelter under simulated fire conditions describing the location of oncoming fire. The time will begin when the firefighter is given the order "Deploy Fire Shelters". The time will stop when the firefighter advises he/she is ready for the "Over Run by Fire".

**EQUIPMENT NEEDED:**

One (1) set of full protective equipment per student  
One (1) traffic cone (to indicate direction of simulated fire)  
One (1) smoke ejector (to simulate wind conditions)  
One (1) shovel (to simulate clearing deployment site)

One (1) clip board per rater  
One (1) marking pen per rater  
One (1) stop watch  
One (1) manipulative performance test directions per rater  
One (1) manipulative performance test directions per student  
One (1) test rating worksheet per rater and per student

**BEHAVIORAL OBJECTIVE:**

**Given:**                      A training fire shelter in a simulated fire situation with wind conditions

**Performance:**            The student will deploy the fire shelter with all safety considerations demonstrated

**Standard:**                Completing all operations within 30 seconds according to the job breakdown with no safety errors. Based on California Department of Forestry Standard

### SCORING CRITERIA FOR EACH OPERATION

#### GENERAL:

Explain the testing process to the students. Be sure they understand the process and have asked any questions they may have prior to beginning the test. No questions will be allowed after the test begins.

In this rating system each Operation is given point value.

**Basic Operations** are given a point value of **one (1)**.

**Essential Operations** are given a point value of **two (2)**.

**Critical Operations** or **Safety Violations** are given a point value of **two (2)**, are pass/fail, and are marked with an **asterisk (\*)**.

Students will be assigned deficiency points for each omission or error made. The student fails the test when a designated number of deficiency points have been assigned, when a Critical Operation is omitted, or a Safety Violation occurs.

Students will call out to verify visual inspection of items used in the testing process.

Students will verbally indicate that they are ready to begin the testing procedure.

The rater(s) will time the evolution and will score the student(s).

#### SPECIFIC:

**10** Operations will be evaluated.

**16** Points are possible.

**11** Points within the allotted time are passing. Failure to achieve this score within the allotted time will be cause for rescheduling.

Students will receive all or none of the points possible for each Operation. When the student misses or improperly performs an Operation, circle the point value listed next to the Operation in which the student makes the error. The total deficiency points will be subtracted from the total points possible to determine the final score. Automatic failure can result from the student not completing a Critical Operation or by committing a Safety Violation. This will cause immediate termination of the test and prevent the student from continuing in the testing process. Exceeding the allotted time for the evolution will also result in automatic failure.

# MANIPULATIVE PERFORMANCE TEST

## HOW TO DEPLOY FIRE SHELTER

STUDENT: \_\_\_\_\_

DATE: \_\_\_\_\_

### OPERATIONS

### KEY POINTS

\*2 1. Select area for deployment

1a. Confirming it is clear of heavy fuels, snags, rolling rocks, etc.

b. Cleaning area down to mineral soil, if time allows

1 2. Remove shelter

2a. From the carrying case

b. By unsnapping case

c. With non-working hand

d. Discarding case

1 3. Pull plastic tab

3a. Grabbing the red tab strip

b. To open the plastic case

1 4. Remove and unfold shelter

4a. Measures 6 1/2 feet long, 3 feet wide and 3 feet high

b. Until semi-flat

1 5. Shake open the shelter

5a. Opening remaining folds

b. To form tent shape for entry

\*2 6. Stand shelter upright

6a. Maintaining firm grip of shelter

b. Facing the opening

c. Note: At no time should you let go of the shelter

\*2 7. Enter shelter

7a. Stepping in upright position

b. With body behind straps

c. Turning body to face opening

d. With your back to oncoming fire

# MANIPULATIVE PERFORMANCE TEST

HOW TO DEPLOY FIRE SHELTER

STUDENT: \_\_\_\_\_

DATE: \_\_\_\_\_

## OPERATIONS

## KEY POINTS

2 8. Take position

- 8a. Grasping upper straps with corresponding hands
- b. Feet anchoring bottom straps
- c. Making sure the fire shelter is spread to its fullest
- d. Maintaining prone position, face down
- e. Note: Your feet should be pointed in the direction of the oncoming fire.

2 9. Remain calm

- 9a. Take short breathes breathing through nose if air is hot
- b. Maintaining control of fire shelter
- c. Note: fire conditions can blow fire shelter away if not secured

2 10. Hold position

- 10a. Remaining together as a group with other firefighters
- b. Communicating if possible with portable radio or voice to members of your group
- c. Until you are certain that it is safe to come out



# MANIPULATIVE PERFORMANCE TEST

HOW TO DEPLOY FIRE SHELTER

STUDENT: \_\_\_\_\_

DATE: \_\_\_\_\_

Comments:

---

---

---

TOTAL POSSIBLE POINTS: 16

DEFICIENCY POINTS: (      )

STUDENT'S FINAL SCORE:       

PASSING SCORE: **11**

MAXIMUM ALLOTTED TIME: **0:30** seconds \*\*\*

STUDENT'S TIME:       

PASS:       

FAIL:       

Reason for Disqualification (if applicable):

---

---

---

---

Evaluator's Signature: \_\_\_\_\_

# A P P E N D I X A

# **WILDLAND FIRE FIGHTING ESSENTIALS**

## **Suggested Training Program**

The following document is a suggested training program for agencies that are designing a qualifications standard for personnel that may or will respond on such emergencies.

It is not the intent or requirement that this become a mandated program, although many agencies have implemented like programs with annual mandatory refresher training.

The attachments are designed to offer training officers, administrators or operational personnel to institute a program or to implement a phase in program if they so desire.

The training classroom course material is designed with the following four areas established as primary areas:

- I. ICS ORGANIZATION
- II. STRIKE TEAM SOP's
- III. WILDLAND TACTICS AND STRATEGY
- IV. WILDLAND SURVIVAL

A suggested two phase program is recommended for agencies that are attempting to establish qualifying standards for emergency responders for ranks of company members and company officers. Training officers, administrators or operational personnel may desire to establish different phase in programs to meet their respective agency needs or the students needs.

# **WILDLAND FIRE FIGHTING ESSENTIALS**

## **I. ICS ORGANIZATION**

- A. Wildland Urban Interface Fire
- B. Concepts of ICS Organization
  - Overview
  - 1. Command Staff and General Staff
  - 2. Operations Section
  - 3. Strike Team Functions and Responsibilities
  - 4. Planning, Logistics and Finance Sections

## **II. STRIKE TEAM SOP's**

- A. State Fire and Rescue Mutual Aid Plan
  - 1. OES & County/Local Department Relationship-Chain of Command
  - 2. County Strike Team SOP's
  - 3. Local Department SOP's
  - 4. Problems and Lessons Learned
- B. Surviving the Strike Team Response
- C. "Agency Specific" Strike Team Standard Operating Procedures

## **III. WILDLAND TACTICS AND STRATEGY**

- A. Wildland Fire Terminology
- B. Factors Affecting Wildland Fires
  - 1. Safety Points
    - a) Fuel
    - b) Topography
    - c) Weather
- C. Defensive and Offensive Strategies in Wildland Fire Fighting
  - 1. Fundamentals of Wildland Fire Attack
- D. The Use of Direct and Indirect Attacks on Wildland Fires
- E. Structure Triage
  - 1. Principles of Structure Triage
  - 2. Size-Up
  - 3. Safety Points
  - 4. Apparatus Operations, Driving, Positioning, Safety Points
- F. Using Structures and Vehicles for Refuge in Wildland Fires

## **IV. WILDLAND SURVIVAL**

- A. Wildland Fire Safety
  - 1. Standard Fire Orders
  - 2. The Situations that Shout "Watchout"
- B. Safety Precautions to be Used Around Aircraft
  - 1. Air Tanker/Helicopter/Ground Safety
- C. How to Deploy Fire Shelters

# WILDLAND STRIKE TEAM RESPONSE

## OES/STRIKE TEAM STANDARDS

### *TWO PHASE IMPLEMENTATION*

#### PHASE I

##### COMPANY MEMBER

Wildland Fire Fighting Essentials  
ICS - 220  
Volunteer Fire Fighter or Fire Fighter I

##### COMPANY OFFICER

Wildland Fire Fighting Essentials  
ICS - 220  
Volunteer Fire Fighter or Fire Fighter I  
ICS - 334  
Rank of Captain or Above

#### PHASE II (Implement over 3 Years)

##### COMPANY MEMBER

Wildland Fire Fighting Essentials  
ICS - 220  
Volunteer Fire Fighter or Fire Fighter I  
Fire Fighter II  
Driver/Operator I  
Fire Command 1A

##### COMPANY OFFICER

Wildland Fire Fighting Essentials  
ICS - 220  
Volunteer Fire Fighter or Fire Fighter I  
Fire Fighter II  
ICS - 334  
Rank of Captain or Above  
Fire Officer  
Fire Command 2E - Wildland

WILDLAND FIRE FIGHTING ESSENTIALS:  
FOUR MODULES (REFRESHER-ANNUAL BASIS)

STRIKE TEAM SOP's  
ICS ORGANIZATION  
WILDLAND TACTICS AND STRATEGY  
WILDLAND SURVIVAL

**COURSE DESCRIPTIONS:**

## **Incident Command System**

<b>TITLE:</b>	I-220 Introduction to Incident Command System (A Basic Orientation Course)	<b>HOURS:</b> 16
<b>DESIGNED FOR:</b>	All Emergency Personnel (police, fire, EMS).	
<b>DESCRIPTION:</b>	This course provides an introduction to and overview of the Incident Command System and introduces the participants to the NIIMS (National Inter-agency Management System).	
<b>PREREQUISITES:</b>	None	
<b>CERTIFICATION CREDIT:</b>	N/A	

<b>TITLE:</b>	I-334 Strike Team Leader – Engine	<b>HOURS:</b> 16
<b>DESIGNED FOR:</b>	Individuals qualifying within the Incident Command System as a Strike Team Leader–Engine.	
<b>DESCRIPTION:</b>	This course orients the participant to the basic responsibilities of an Engine Strike Team Leader. Subjects covered include: The strike team concept; types of strike teams; pre–incident responsibilities; assembly and travel; incident arrival and check–in; assigned/available status; out of service status; and demobilization/release.	
<b>PREREQUISITES:</b>	I-220 (Basic ICS)	
<b>CERTIFICATION CREDIT:</b>	N/A	

## *COURSE DESCRIPTIONS:*

### **Command**

<b>TITLE:</b>	<b>FIRE COMMAND 1A</b> Command Principles for Company Officers	<b>HOURS:</b> 40
<b>DESIGNED FOR:</b>	First-In Incident Commander or Company Officers	
<b>DESCRIPTION:</b>	This course provides instructions and simulation time to the participants pertaining to the initial decision and action processes at a working fire. The course includes areas of discussion on the fire officer, fire behavior, fireground resources, operations and management.	
<b>PREREQUISITES:</b>	ICS-220	
<b>CERTIFICATION CREDIT:</b>	This course applies to FIRE OFFICER certification.	
<b>TITLE:</b>	<b>COMMAND 2E</b> Wildland Fire Tactics	<b>HOURS:</b> 40
<b>DESIGNED FOR:</b>	Fire Officers who have command responsibilities at wildland fires.	
<b>DESCRIPTION:</b>	This course contains such topics as: California's wildland fire problem; wildland fire safety; weather aspects; wildland fuels; wildland fire behavior; initial attack methods; using support equipment; using topographic maps; strategy and tactics; and air attack operations. Involves class participation and simulation.	
<b>PREREQUISITES:</b>	Command 2A I-220 (Basic ICS)	
<b>CERTIFICATION CREDIT:</b>	This course applies to CHIEF OFFICER certification.	

*COURSE DESCRIPTIONS:*

## Driver / Operator

**TITLE:** DRIVER/OPERATOR 1A **HOURS:** 40  
Emergency Vehicle Operations

**DESIGNED FOR:** Fire Service and Allied Emergency Response Personnel.

**DESCRIPTION:** This course is designed to provide the student with information on driver techniques for emergency vehicles and techniques of basic inspection and maintenance for emergency vehicles, including actual driving exercises under simulated emergency conditions.

**PREREQUISITES:** None

**CERTIFICATION CREDIT:** This course applies to DRIVER/OPERATOR I certification.

**TITLE:** DRIVER/OPERATOR 1B **HOURS:** 40  
Pump Operations

**DESIGNED FOR:** Fire Service Emergency Response Personnel.

**DESCRIPTION:** This course provides the student with the information, theory, methods, and techniques for operating fire service pumps. Subjects include: Types of pumps; engine and pump gauges; maintenance; unsafe pumping conditions; pressure relief devices; cooling systems; water supplies; drafting; field hydraulics; and pumping operations.

**PREREQUISITES:** None

**CERTIFICATION CREDIT:** This course applies to DRIVER/OPERATOR I certification.



## *COURSE DESCRIPTIONS:*

### **Certification**

<b>TITLE:</b>	FIRE FIGHTER I
<b>DESIGNED FOR:</b>	Entry Level Fire Fighter
<b>DESCRIPTION:</b>	Provides the skills and knowledge necessary for the entry–level fire fighter. Fire Fighter I is the level of certification that allows entry into all tracks of the certification system.
<b>PREREQUISITES:</b>	None
<b>CERTIFICATION CREDIT:</b>	Fire Fighter I certification.
<b>TITLE:</b>	FIRE FIGHTER II
<b>DESIGNED FOR:</b>	In–Service Level Fire Fighter
<b>DESCRIPTION:</b>	Fire Fighter II is the second step in the fire fighter certification track. It is currently the prerequisite for the Fire Officer and Specialty certification levels. Because of its local orientation, the Fire Fighter II program is an excellent probationary training program for those already certified at the Fire Fighter I level.
<b>PREREQUISITES:</b>	Certified Fire Fighter I
<b>CERTIFICATION CREDIT:</b>	Fire Fighter II certification.

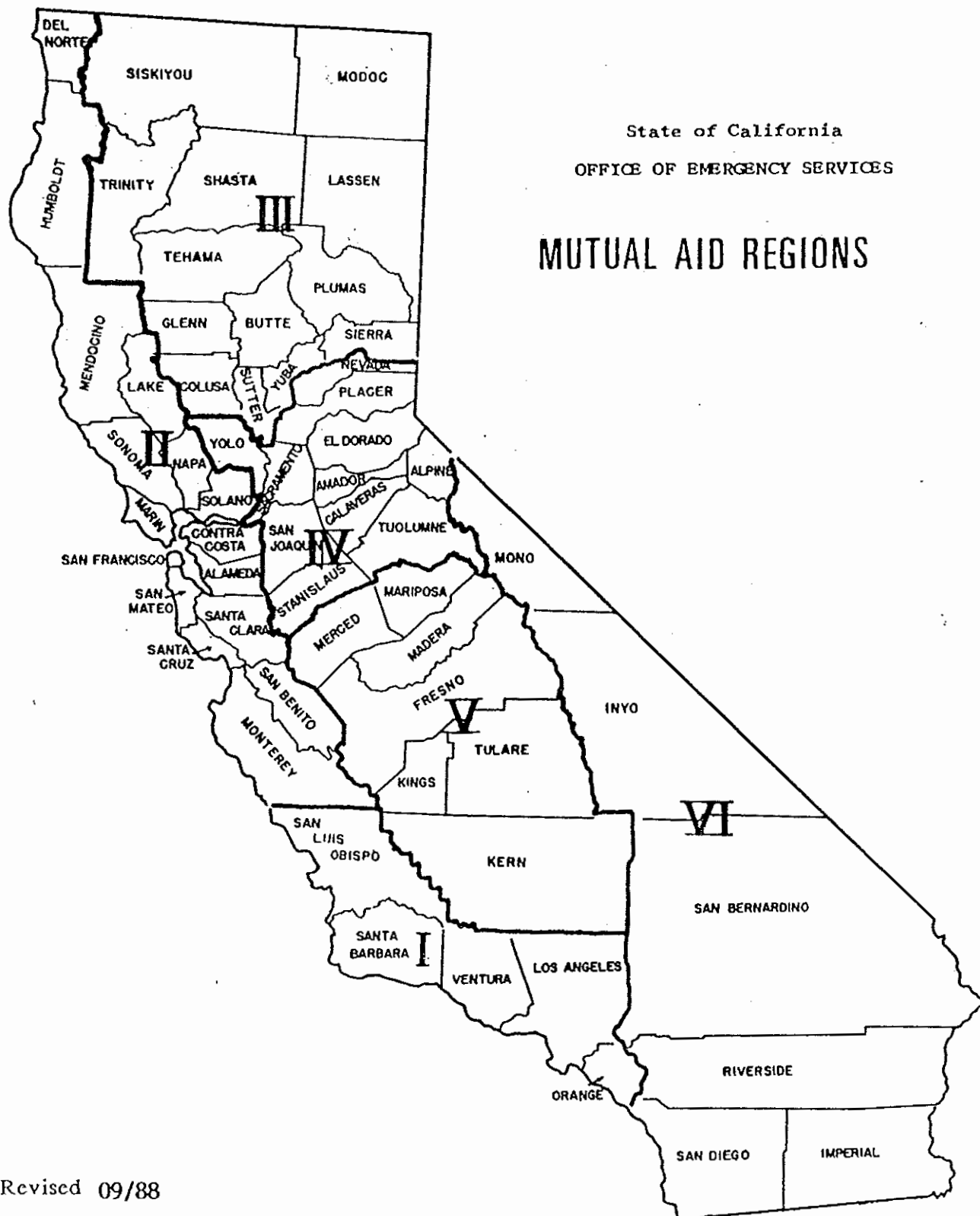
*COURSE DESCRIPTIONS:*

## Certification

<b>TITLE:</b>	FIRE OFFICER
<b>DESIGNED FOR:</b>	Fire service personnel seeking appropriate levels of certification
<b>DESCRIPTION:</b>	<p>Fire Officer is the first of three steps of certification leading to the position of Certified Fire Chief. The three steps include Certified Fire Officer, Certified Chief Officer, and Certified Fire Chief.</p> <p>* Eight courses comprise the educational requirements for Fire Officer. These courses include Fire Command 1A, Fire Command 1B, Fire Instructor 1A, Fire Instructor 1B, Fire Investigator 1A, Fire Management 1, Fire Prevention 1A and Fire Prevention 1B.</p>
<b>PREREQUISITES:</b>	Certified Fire Fighter II or hold the rank of officer
<b>CERTIFICATION CREDIT:</b>	Fire Officer certification.

# A P P E N D I X B

## MUTUAL AID REGIONS



# A P P E N D I X C

# WILDLAND FIRE CONTROL COMMAND CHECKLIST

<b><u>INCIDENT COMMANDER</u></b> PLAN ORGANIZE DIRECT CONTROL	<b><u>PRODUCTION CAPABILITIES</u></b> <b><u>ENGINES (HOSELAYS)</u></b> 3 ENGINES/HOSELAY 9 FIREFIGHTERS PER LAY 1 1/2" PROGRESSIVE COMBO. NOZZLE/50 GPM LATERALS EVERY 300' 4 - 5 MINUTES PER 100' WATER TENDER/SOURCE
<b><u>SAFETY</u></b> CLOTHING (P.P.E.) FIRE SHELTER COMMUNICATIONS WATER	<b><u>DOZERS (LINE CONSTRUCTION)</u></b> 1/2 MILE OR 900 YARDS/HR. ASK OPERATOR SINGLE PASS LINE SWAMPER HEIGHT OF VEGETATION
<b><u>SIZE-UP</u></b> 1. PRE-ARRIVAL A. FUEL/TOPOGRAPHY B. WEATHER C. TIME D. TYPE OF FIRE E. GENERAL LOCATION 2. WHERE IS FIRE? 3. WHAT IS BURNING? 4. WHAT WILL BURN? 5. LIVE HAZARD? 6. RESOURCE/SITUATION STATUS	<b><u>FIRE CREWS (LINE CONSTRUCTION)</u></b> 15 PERSON CREW FIGURES GRASS - 900'/HR. - 3' WIDE MED. BRUSH - 450'/HR. - 6' WIDE HVY. BRUSH - 300'/HR. - 9' WIDE HEAVIEST BRUSH - 225'/HR. - 12' WIDE CONSIDER CREW STRIKE TEAM
<b><u>FIRE BEHAVIOR</u></b> BURNING INDEX (B.I.) DIFFICULTY OF CONTROL FLAME LENGHT = B.I./10 SCALE 0 TO INFINITY IGNITION INDEX (I.C.) PROBABILITY OF FIRE START SCALE 0 TO 100% OVER 80%, SPOTS CERTAIN <b><u>RATE OF SPREAD (R.O.S.)</u></b> <b><u>DOUBLES</u></b> FOR EACH 20% SLOPE INCREASE <b><u>DOUBLES</u></b> AS WIND SPEED DOUBLES ABOVE 10 MPH	<b><u>AIRTANKERS</u></b> TYPE 1 - 2000+ GALLONS TYPE 2 - 1000+ GALLONS TYPE 3 - 800 GALLONS TRAIL DROP (LIN. FT.) = GALLONS/2 SALVO DROP (LIN. FT.) = GALLONS/4  <b><u>HELICOPTERS</u></b> WATER DROPS PERSONNEL TRANSPORT AERIAL RECON/OBSERVATION RESCUE/EVACUATION SUPPLIES  <b><u>DIRECT/INDIRECT/PARALLEL</u></b>

# A P P E N D I X D

NAME \_\_\_\_\_

DATE \_\_\_\_\_

## WILDLAND ESSENTIALS TEST

### MULTIPLE CHOICE TEST

INSTRUCTIONS: This is a multiple-choice test. For each of the following questions select the answer that is most nearly correct and mark the appropriate answer on the answer sheet provided.

EXAMPLE: Methods and operating procedures which reduce fire, water and smoke damage during and after a fire is

- a. overhaul
- b. ventilation
- c. extinguishment
- ☒ d. salvage

### INCIDENT COMMAND

1. Define "Strike Team" as used in the Incident Command System.
  - a. a group of single resources of the same type and capability with common communications and a leader
  - b. a group of personnel assembled to perform a specific task
  - c. a group of unlike single resources assembled to perform a specific task with common communications and a leader
  - d. a group of single resources deployed in the Base
2. Which of the following are the minimum Incident Command System Communications nets?
  - a. Command, Control, Logistics
  - b. Command, Tactical, Base
  - c. Command, Tactical, Support
  - d. Command, Tactical, Air
3. Which Incident Command System positions report directly to the Incident Commander?
  - a. Command Staff
  - b. General Staff
  - c. Command Staff and General Staff
  - d. Deputy Personnel



4. Which Incident Command System positions may have a Deputy?
  - a. No ICS positions have deputies
  - b. The Incident Commander and Section Chiefs
  - c. All Command Staff positions
  - d. Only Operations positions
5. What are the duties of the Incident Commander?
  - a. The Incident Commander directs all incident control (tactical) operations
  - b. The Incident Commander supervises the Command Staff
  - c. The Incident Commander supervises the General Staff
  - d. The Incident Commander is an administrator responsible for all incident activities
6. What are the three types of Strike Teams?
  - a. Engine, Truck, Tender
  - b. Engine, Crew, Truck
  - c. Engine, Dozer, Tanker
  - d. Engine, Crew, Dozer
7. Which of the following most accurately describes the duties of the Information Officer?
  - a. The Information Officer files and documents all information regarding the incident
  - b. The Information Officer supervises the information section staff
  - c. The Information Officer prepares and releases information about the incident to the news media and other appropriate agencies.
  - d. The Information Officer prepares the reports to be presented at the Planning meetings
8. Which of the following most accurately describes the duties of the Safety Officer?
  - a. Looks for and recommends remedies for unsafe situations and monitors personnel safety
  - b. Writes citations for safety violations and unsafe situations
  - c. Investigates injuries or claims filed by civilians
  - d. Investigates accidents, only if incident personnel are involved
9. What does the Liaison Officer do?
  - a. The Liaison Officer is the contact person for all assisting and cooperating agency representatives
  - b. The Liaison Officer supervises the Liaison Section
  - c. The Liaison Officer supervises the General Staff with the Command Staff
  - d. The Liaison Officer coordinates the activities of the Command Staff

10. Define "Task Force" as used in the Incident Command System.
  - a. a group of single resources of the same type and capability with common communications and a leader
  - b. a group of personnel assembled to perform a specific task
  - c. a group of unlike single resources assembled to perform a specific task with common communications and a leader
  - d. a group of single resources deployed in the Base
11. Explain the duties of the Deputy Operations Chief.
  - a. Relieves the Operations Chief as necessary
  - b. Acts as an assistant (although equally qualified) to the Operations Chief
  - c. Supervises the Branch and Staging Areas
  - d. Supervises the Divisions and Groups
12. If you need to contact a member of the Command Staff, where would you look?
  - a. At the Base Unit
  - b. At the Communications Unit
  - c. At the Command Post
  - d. At one of the Camps
13. What is the span of control commonly used in the Incident Command System?
  - a. 3 to 1
  - b. 5 to 1
  - c. 6 to 1
  - d. 7 to 1
14. Which of the following units has the responsibility to make certain that all assigned personnel and resources have checked in at the incident and maintains a current status on all resources?
  - a. Resource Unit
  - b. Situation Unit
  - c. Documentation Unit
  - d. Communications Unit
15. Which unit should personnel report to, prior to returning to their assigned agencies to check the apparatus conditions for optimum safety?
  - a. Resource Unit
  - b. Supply Unit
  - c. Ground Support Unit
  - d. Demobilization Unit

16. Can a Branch or Group be established based on function alone?
- No, Branches and Divisions are geographic only
  - No, Branches and Divisions are based on safety need
  - Yes, if workload and span of control dictates
  - Yes, when it is for training only
17. Which of the following most accurately describes the duties of the Operations Chief?
- The Operations Chief directs all incident control (tactical) operations
  - The Operations Chief supervises the Command Staff
  - The Operations Chief supervises the General Staff
  - The Operations Chief is an administrator responsible for all incident activities
18. Which of the following are standardized ICS facilities?
- Command Post, Camps, Communications Center, and Heliports
  - Command Post, Incident Base, Camps, Helibase, Helispots and Staging Areas
  - Command Post, Staging Areas, Base, Camps, Message Center, and Check-In
  - Command Post, Camps, Communications Center, Helibase and Heliports
19. Which unit is responsible for ordering, receiving, storing and processing of all–incident related resources, personnel and supplies?
- Facilities Unit
  - Supply Unit
  - Ground Support Unit
  - Situation Unit
20. Which of the following units is responsible for collecting, processing and organizing information about the incident?
- Resource Unit
  - Situation Unit
  - Documentation Unit
  - Communications Unit
21. What are the basic responsibilities of the Planning Section?
- Ordering, dispersing of all incident assigned resources
  - Collecting, evaluating, and using information about the incident, resources and other factors necessary to understand the situation
  - Handling the information necessary to support the Logistics Section
  - Collecting, evaluating, and preparing information for the Operations Section
22. Which section is responsible for the ordering of all off–incident resources?
- Operations
  - Planning
  - Logistics
  - Finance

23. Which of the following most accurately describes the function of the Finance Section?
- a. Handles all contracting for the dozers
  - b. Handles agency specific finance problems at an incident
  - c. Handles incident payroll and disburses funds for the incident supplies
  - d. Handles the funding of incident resources and equipment
24. Which of the following is used in ICS Communications?
- a. Clear text
  - b. 10 codes with explanations
  - c. utilization of the 9 and 10 codes
  - d. Clear text and agency specific codes
25. Alcoholic beverages
- a. can be allowed in moderation if consumed when out of service in Base
  - b. restricted consumption is allowed when supervised
  - c. can be consumed after being served meals by the Food Unit
  - d. are not allowed during performance with Strike Teams or OES Operations

#### STRIKE TEAM SOP's

26. The California Fire Service and Rescue Emergency Mutual Aid Plan is a extension of?
- a. The Incident Command System
  - b. California Government Code
  - c. California Emergency Plan
  - d. California Emergency Code
27. The Mutual Aid Plan conducts operations on how many levels?
- a. 2
  - b. 3
  - c. 4
  - d. 5
28. The State is divided into how many mutual aid regions?
- a. 3
  - b. 4
  - c. 5
  - d. 6

29. The duly proclaimed existence of conditions of extreme peril to the safety of persons and property within the state, is called?
- a. Local Emergency
  - b. State of Emergency
  - c. District Emergency
  - d. Mutual Aid Emergency
30. OES engines should be staffed by how many fire fighters?
- a. 2
  - b. 3
  - c. 3 or more
  - d. 4 or more
31. Training for emergency personnel shall include what?
- a. All-risk emergencies
  - b. Annual up-dates
  - c. Monthly up-dates
  - d. Summer up-dates
32. Emergency operations planning occurs at?
- a. Local level
  - b. Regional Level
  - c. State level
  - d. All of the above
33. Information needed for a strike team assignment includes what?
- a. Reporting location
  - b. Communications frequency
  - c. Order/request number
  - d. All of the above
34. Strike team kits should be limited to:
- a. District issued safety equipment
  - b. Medications
  - c. Money
  - d. None of the above
35. The Order/Request number is?
- a. Of no importance
  - b. Important
  - c. Very important
  - d. Of no value

36. Operational strike team kits should not include:
- a. Fire shelters
  - b. Maps
  - c. Rations
  - d. Sleeping bags
37. During travel responses, the slowest vehicle should?
- a. Follow in the rear
  - b. Lead
  - c. Be in the middle
  - d. Should not respond
38. Check-in at an incident cannot be done at?
- a. Helibase/Helispot
  - b. Incident Base
  - c. Staging
  - d. Communications
39. Check-in recorder must know what?
- a. Agency
  - b. Assignment
  - c. Order/Request Number
  - d. All of the above
40. At Incident base, you should do what, when you arrive?
- a. Check all fluids of your apparatus
  - b. Check out the food line
  - c. Check out supplies at the supply unit
  - d. All of the above
41. As a strike team, you should?
- a. Stay together
  - b. Rest together
  - c. Eat together
  - d. All of the above
42. When you are assigned to Base, you are?
- a. Available
  - b. In-Service
  - c. Out of Service
  - d. None of the above

43. From the Incident Action Plan, you can get the following information?
- a. Safety Hazards
  - b. Weather conditions
  - c. Resources committed
  - d. All of the above
44. Who is responsible for manning the OES engine?
- a. First crew
  - b. Second crew
  - c. Third crew
  - d. Forth crew
45. Who determines the "Code" of the move up assignment?
- a. Captain
  - b. Battalion Chief
  - c. Assistant Chief
  - d. Deputy Chief
46. Relief crews are provided routinely every how many days?
- a. Two
  - b. Three
  - c. Four
  - d. Five
47. When returning an engine from an incident, who will insure the apparatus is placed back into service?
- a. Station Captain
  - b. Battalion Chief from the appropriate battalion
  - c. Assistant Chief
  - d. Engineer
48. Any crew committed less than 24 hours to a strike team assignment, will:
- a. have their name placed at the bottom of the list
  - b. will maintain their rotational location on the list
  - c. will not be subject to any rules
  - d. None of the above
49. Who activates the first strike team requests?
- a. Local Chief
  - b. Area Coordinator
  - c. Regional fire and rescue coordinator
  - d. State fire and rescue coordinator

50. Who is in charge of all manpower and apparatus received?

- a. Local administrator
- b. Operational area fire and rescue coordinator
- c. Regional fire and rescue coordinator
- d. Office of Emergency Services

### WILDLAND TACTICS AND STRATEGY

51. When winds flow through a restriction such as a saddle of a narrow canyon or a "V" drainage, the result will be:

- a. an increase in wind velocity
- b. a decrease in wind velocity
- c. no change in wind velocity
- d. either A or C

52. All of the following statements about a wildland fire "size-up" are true, except:

- a. size-up begins with the first report of the fire
- b. pre-fire planning will assist in a more successful size-up
- c. size-up can only be made when actually on the scene
- d. size-up is a continuous process

53. The construction of a minimum trail along the fire perimeter to prevent further advance of the fire after the perimeter is relatively cold. This process is called:

- a. size-up
- b. fire control
- c. direct attack
- d. cold trailing

54. Controlling the fire by having the control line some distance from the approaching fire. The statement is called?

- a. Parallel attack
- b. Burn out
- c. Direct attack
- d. Indirect attack

55. The most intense part of a wildland fire is known as/a:

- a. point of ignition
- b. flank
- c. point of initial burning
- d. head



56. An unfinished, preliminary, control line hastily constructed as an emergency measure to check the spread of a fire, is called a?
- Fire line
  - Control line
  - Scratch line/Hot spotting
  - Hot line
57. An advantageous location, usually a barrier to fire spread from which to start the construction of a fire line, is called a?
- Burn out
  - Direct attack
  - Anchor point
  - Flanking action
58. A sudden increase in fire intensity or rate of spread sufficient to preclude attack or existing control plans, is called a?
- Spot fire
  - Hot spot
  - Blow up
  - Flare up
59. In the wildland fire situation, fire will produce heat. The heat produced will be transferred by:
- conduction
  - radiation
  - convection
  - all of the above
60. Limitations in water tank capacity of fire apparatus requires the need for refilling, therefore consideration must be given to:
- travel distance
  - road conditions
  - locked gates
  - all of the above
61. All types of fire line construction must have a:
- trench
  - backfire
  - anchor point
  - all of the above

62. An example of a light fuel is:
- a. stumps
  - b. brush
  - c. logs
  - d. grass
63. The term that describes the proximity of fuel particles to one another in respect to the free movement of air, is called?
- a. Volume
  - b. Topography
  - c. Compactness
  - d. Humidity
64. Which of the following best describes the "One foot in the burn" tactic?
- a. Working directly on the fire line flanks
  - b. "Hot spotting"
  - c. The indirect attack
  - d. Taking a stand on the ridge
65. What is a disadvantage of the direct method?
- a. The firefighter is usually away from the heat and smoke
  - b. The firefighter can use "dead line" in line construction
  - c. The firefighter is usually in a lot of heat and smoke
  - d. The firefighter is in the burn
66. A rule of thumb on the width of a handline is:
- a. the width of the line is equal to the fuel height
  - b. the width of the line is 1 1/2 the fuel height
  - c. the width of the line is 1/2 the fuel height
  - d. none of the above
67. Which one of the following aspects or exposures on a hillside generally has the hotter, lighter, and flashier fuels?
- a. Southern aspect
  - b. North aspect
  - c. Northeastern aspect
  - d. East aspect
68. A fire that was ignited across the control line by hot embers from the main fire is called?
- a. Hot spot
  - b. Spot fire
  - c. Blow-up
  - d. None of the above

69. Which of the three wildland attack methods is considered the safest?
- a. Indirect attack
  - b. Mobile attack
  - c. Parallel attack
  - d. Direct attack
70. The three parts of the wildland fire environment that influence fire behavior are?
- a. Wind, Fuel, Oxygen
  - b. Fuel, Weather, Topography
  - c. Fuel, Slope, Temperature
  - d. Topography, Relative Humidity, Fuel
71. Under normal weather conditions, which of the following is a true statement?
- a. Wind blows down canyon during the day, up canyon at night
  - b. The higher the humidity, the faster the fire burns
  - c. Fire burns faster upslope than down slope, generally
  - d. The temperature has little to do with how a fire will burn
72. When using water in ground cover firefighting operations, it is important to remember to:
- a. apply water at base of flames
  - b. parallel the fireline with the stream
  - c. keep volume at lowest level that will be effective
  - d. all of the above
73. In a wildland fire, what is the burn?
- a. The part that is burning the hottest
  - b. The origin
  - c. The overall picture of the fire
  - d. The area of the fire that has already burned
74. An example of a mobile attack method is called what?
- a. Pincer
  - b. Simple
  - c. Progressive
  - d. All of the above
75. A long, narrow strip extending out from the main fire is a:
- a. hot spot
  - b. island
  - c. burn
  - d. finger

## WILDLAND SURVIVAL

76. The first area of the "FIRE ORDERS" concerns
- a. Fire safety
  - b. Fire Behavior
  - c. Fire Command
  - d. Operations control
77. There are how many situations that shout "watch out" that relate to wildland fire control?
- a. 10
  - b. 13
  - c. 15
  - d. 18
78. There are how many standard fire fighting orders that relate to wildland fire control?
- a. 10
  - b. 13
  - c. 15
  - d. 18
79. It is not acceptable for personnel to work around helicopters when not in \_\_\_\_\_ view of the pilot?
- a. Partial
  - b. Full
  - c. Obscured
  - d. Half
80. When working around helicopters, goggles and a helmet with a chinstrap should \_\_\_\_\_ be worn?
- a. always
  - b. never
  - c. at your discretion
  - d. sometimes
81. Complete the following standard firefighting order: Keep informed of fire ...
- a. statistics and causes
  - b. weather conditions and forecasts
  - c. areas of origin
  - d. all the above

82. Complete the following standard firefighting order: Know what your ...
- menu is for dinner
  - crew leader is thinking
  - fire is doing, observe personally and use scouts
  - options are
83. Complete the following standard firefighting order: Have escape routes ...
- for yourself only
  - for everyone and make them known
  - for everyone
  - all of the above
84. Complete the following standard firefighting order: Base all actions on the ...
- current situation and how it appears
  - wind currents
  - current and expected behavior of the fire
  - time of day
85. Complete the following standard firefighting order: Be alert, keep ...
- calm, think clearly, act decisively
  - informed, be cautious
  - your tool with you at all times
  - none of the above
86. There are ten Standard Firefighting Orders for wildland firefighting; each order has a specific purpose and design. However, all of the ten orders point to one objective:
- Maintain control of the situation
  - Firefighting
  - Weather observation
  - Safe but aggressive firefighting
87. If your vehicle was about to be over-run by a rapidly advancing fire, all of the following should be done, except?
- Get inside and close all windows and vents
  - Get under the vehicle
  - Use full protective clothing
  - Notify your commander
88. Generally speaking, building a fireline downhill is considered?
- A hazardous practice
  - A safe and practical practice
  - A good alternative to the direct attack
  - A good alternative to the indirect attack

89. Before entering a helicopter landing area the first thing to do is?
- Establish eye-to-eye contact with the pilot
  - Have the wind to your back
  - Wet the area down
  - Establish radio contact
90. All of the following are good practices when establishing a helispot, except?
- A flat area, 100 feet in diameter or more
  - Near the Command Post as possible
  - An area with as much landing area as possible
  - An area free of power poles and obstructions
91. After several hours work on the fire line, you and your crew have the chance to eat and rest. All of the following are permitted, except?
- Eat a good meal and replace fluids
  - Change clothes and boots, if possible
  - Use washroom and toilet facilities
  - Sleep in or on the apparatus without a look-out
92. All of the following are "Watch Out" situations to be on guard for, except?
- Weather getting hotter and drier
  - Frequent spot fires over your line
  - Drops in water pressure
  - Sharp change in wind direction
93. When working around dozers, safety is of the most importance. This statement is?
- True
  - False
  - True, only in the hillside areas
  - None of the above
94. When a Air Tanker is dropping you should ...
- get outside the drop area
  - watch for limbs and tops
  - protect yourself by laying flat, if caught in the drop zone
  - all of the above
95. History has established the ten standard firefighting orders as \_\_\_\_\_ safety directives?
- good
  - excellent
  - practical and prudent
  - well used

96. If you are about to be dropped on, by a airtanker, you should:

- a. move out of the target area
- b. never stand up in the path of an air drop
- c. lay face down facing the oncoming air drop
- d. all of the above

97. After an air drop, you should?

- a. Move on to another area
- b. Follow-up in the drop area
- c. Request another assignment
- d. None of the above

98. You should deploy the fire shelter with your head facing?

- a. The fire
- b. Away from the fire
- c. Either A or B
- d. None of the above

99. When in a fire shelter, you should not?

- a. Breath through a wet cloth
- b. Breath shallow breathes through your nose
- c. Remain calm
- d. Communicate with others

100. Common denominators on tragedy fires are?

- a. Relatively small fires
- b. Deceptively light fuels
- c. Fire ran up hills surprisingly fast
- d. All of the above

# KEY

1. a	26. c	51. a	76. a
2. c	27. c	52. c	77. d
3. c	28. d	53. d	78. a
4. b	29. b	54. d	79. b
5. d	30. c	55. d	80. a
6. d	31. a	56. c	81. b
7. c	32. d	57. c	82. c
8. a	33. d	58. c	83. b
9. a	34. d	59. d	84. c
10. c	35. c	60. d	85. a
11. b	36. d	61. c	86. d
12. c	37. b	62. d	87. b
13. b	38. d	63. c	88. a
14. a	39. d	64. a	89. a
15. d	40. a	65. c	90. b
16. c	41. d	66. b	91. d
17. a	42. c	67. a	92. c
18. b	43. d	68. b	93. a
19. b	44. a	69. d	94. d
20. b	45. c	70. b	95. c
21. b	46. b	71. c	96. d
22. c	47. b	72. d	97. b
23. b	48. b	73. d	98. b
24. a	49. a	74. a	99. a
25. d	50. a	75. d	100. d